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Three Months' Goods Train Traffics

FREIGHT train traffics of all standard gauge railways in Great Britain for the twelve weeks ended March 21, 1936, showed on the whole a rise of 3·56 per cent. in units and of 4·50 per cent. in receipts compared with the corresponding period of 1935 as indicated in the analysis published with the Ministry of Transport statistics for the month of March, 1936. In the higher class merchandise tonnage of 11,180,538 there was a rise of 473,372 tons or 4·42 per cent., and the receipts of £9,312,107 advanced by £316,196 or 3·52 per cent. Of minerals and merchandise (classes 1-6) 12,200,469 tons were carried, an increase of 357,844 tons or 3·02 per cent., with receipts of £3,170,738 which were higher by £70,468, or 2·27 per cent., than those for the corresponding period of 1935. Coal, coke, and patent fuel tons numbered 44,707,037, an increase of 1,503,457 tons or 3·48 per cent., producing receipts of £8,576,151, which were higher by £519,056, or 6·44 per cent., than those for the corresponding twelve weeks in 1935. Live stock receipts amounted to £262,946, an increase of £11,598 or 4·61 per cent. Net ton-miles increased by 7·26 per cent., but net ton-miles per total engine-hour decreased by 2·70 per cent. Average wagon and train loads increased by 1·96 per cent. and 3·51 per cent., respectively.

Fatal Road Accidents in 1935

So many people are inclined to blame the motor vehicle for all fatalities on the road, that it is at least interesting to observe from the report of the Ministry of Transport inquiry into the fatal accidents of 1935, that in 9·7 per cent. no mechanically-propelled vehicle was involved. It is rather significant that most of the private cars involved in accidents were of the light types, which suggests that they were being driven faster than their design and construction justified, while in the case of industrial vehicles it was the heavier types that were in the majority. Some justification for the amount of road widening that has been, and still is being, carried out can be found in the decline in the number of head-on collisions, but the increase in the number of side-on collisions suggests that more attention should be given to blind cross-roads and dangerous turnings. The fact that 58 per cent. of the accidents occurred in daylight and 60 per cent. on straight roads or open roads with good sight lines is amazing, and affords justification of the examination of new drivers. Pedal cyclists and motor cyclists are recorded as responsible for more accidents than any other class of driver. Those killed on the road in 1935 totalled 6,477, of which 3,079 were pedestrians, 1,376 pedal cyclists, 1,052 motor cyclists, and 434 pillion passengers.

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The Week's Traffics

For the past week the traffics of the four group companies showed a total gain of £187,000, as compared with £154,000 for the previous week. In the 34 weeks of the current year they have together secured estimated gross earnings of £101,400,000, representing an advance of £3,058,000, or 3·11 per cent. This increase is made up of £522,000 from passenger train traffic, £1,607,000 from merchandise, and £929,000 from coal, coke, and patent fuel. The L.M.S.R. has increases of £254,000, or 1·51 per cent., from passenger train traffic, of £912,000, or 6·08 per cent., from merchandise, and of £415,000, or 5·41 per cent., from coal. On the L.N.E.R. the corresponding increases are £128,000 (1·17 per cent.), £411,000 (3·95 per cent.), and £395,000 (5·33 per cent.). The G.W.R. advance in merchandise is £266,000, or 4·38 per cent.

	34th Week				Year to date	
	Pass., &c.	Goods, &c.	Coal, &c.	Total	Inc. or Dec.	
	£	£	£	£	£	%
L.M.S.R. ..	+ 15,000	+ 40,000	+ 23,000	+ 78,000	+ 1,581,000	+ 4·00
L.N.E.R. ..	+ 27,000	+ 30,000	+ 7,000	+ 64,000	+ 934,000	+ 3·25
G.W.R. ..	+ 4,000	+ 14,000	− 1,000	+ 17,000	+ 377,000	+ 2·28
S.R. ..	+ 25,000	+ 2,000	+ 1,000	+ 28,000	+ 166,000	+ 1·23

London Transport for the first 8 weeks of the year has receipts of £4,421,600, an increase of £113,300.

* * * *

Is Air-Conditioning Appreciated?

Debate upon the question of how much the air-conditioning of railway vehicles is appreciated by the public should be conclusively settled within a few months, when the Equipment Research Division of the Association of American Railroads publishes the results of a referendum now being held on passenger trains so equipped throughout the U.S.A. Tests of the efficiency of the apparatus at present in use are being carried out by research engineers, after an intensive course at the Ohio State University and elsewhere, and at the same time questionnaires are being distributed to travellers inviting their views on the atmosphere provided for them. Thus, while the delicate portable apparatus with which the engineers are equipped will count the number of bacteria in the air, or detect draughts too slight to be perceptible, less academic considerations will be taken into account through the medium of the passengers themselves. They will be

asked to state their approval or otherwise of the temperature, humidity, and ventilation of the carriages, adding whether they detect evidence of smoke in tunnels, or undue burdening of the atmosphere by pipes and cigarettes.

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Overseas Railway Traffics

A satisfactory feature in Argentine railway traffics in the past two weeks has been the recovery in Central Argentine gross earnings which has converted a decrease of £14,666 into an increase of £41,071. For the corresponding 8 weeks of 1935, however, this company had a decrease of £97,098. In the two weeks the previous decreases of the Buenos Ayres & Pacific and the Buenos Ayres Western have been reduced by £8,352 and £5,765, respectively, and the Cordoba Central has gained £11,010, but the Buenos Ayres Great Southern has added £12,887 to its former decreases.

	No. of Week	Weekly Traffics	Inc. or Decrease	Aggregate Traffic	Inc. or Decrease
		£	£	£	£
Buenos Ayres & Pacific ..	8th	75,747	+ 3,991	565,954	— 12,205
Buenos Ayres Great Southern ..	8th	113,240	— 10,131	831,192	— 90,057
Buenos Ayres Western	8th	41,476	+ 4,482	302,611	— 14,816
Central Argentine	8th	138,178	+ 23,880	996,293	+ 41,071
Canadian Pacific	33rd	520,400	+ 42,800	16,204,000	+1,258,800
Bombay, Baroda & Central India	20th	181,125	+ 14,700	3,279,300	+ 215,550

Canadian Pacific net earnings for the first six months of 1936 amounted to £1,358,200, an increase of £145,800 on the first half of 1935.

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Mitropa Company Results

The improved position of the German State Railway reported in our issue of May 29 is reflected in turn in the accounts of the Mitropa Company (Mitteleuropäische Schlafwagen und Speisewagen A.G.) for 1935, as the traffic receipts rose from 27·7 million marks in 1934 to 29·7 million marks in 1935. In July, 1935, there were 190 sleeping and 228 restaurant cars running as against 180 and 217 the year before, and the number of kitchen service cars remained at 41. A recent development was the provision of restaurant facilities in the high-speed diesel services between Berlin and Hamburg, Berlin and Cologne, and Berlin and Frankfort (Main). The number of revenue-earning car-kilometres rose from 87,100,000 to 93,100,000. A feature of the operations for the previous year was the accommodation provided for 830 special trains, either by restaurant cars or food supply service, and there was a further extension in 1935 when 1,250 special trains were furnished with these facilities. Satisfactory progress in this respect is also being made during the current year. The working results for 1935 showed a clear profit of 618,013 marks, from which have to be deducted the debit balance of 362,792 marks brought forward from the previous year, and various charges, leaving 33,497 marks to be carried forward.

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Belgian Light Railways

The Société Nationale des Chemins de fer Vicinaux, which for over fifty years has provided efficient and economical transport in Belgium by means of light railways frequently laid upon or alongside public roads, had a slight set-back in 1935 compared with the previous year. Receipts were lower by fr. 1,240,364, or 0·55 per cent., and expenditure increased by fr. 991,526, or 0·44 per cent. Passenger receipts were up by about fr. 5,500,000, or 3·15 per cent., mainly because of the numerous festivities in connection with the Brussels Exhibition, but goods receipts were down by about fr. 6,800,000, or 13·6 per cent. In spite of the strictest economy, expenditure was increased by the higher price of materials because of the devaluation of the Belgian franc, by the advance in salaries, and by the increase in train-kilometres.

	1935	1934
Kilometres open	4,761	4,720
Train-kilometres	58,324,916	54,682,179
Operating ratio, per cent. ..	100·36	99·37
	Fr. (Belg.)	Fr. (Belg.)
Gross receipts	225,125,406	226,365,770
Expenditure	225,931,354	224,939,828
Net receipts	Dr. 805,948	1,425,942

Of the 4,761 km. open, 3,471 km. were operated by steam or by railcars, and 1,290 km. were electric. On the electric lines the operating ratio was 93·57 per cent., and on the other lines 114·29 per cent. Of the steam lines 2,518 km. were worked at a loss. During 1935 26 petrol railcars were in operation, and some of the 100 heavy-oil railcars on order came into use with satisfactory results.

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A Reminder of Austin Chambers

On page 269 of our issue of August 14 we reproduced a photograph of the down outer home signal at Verney Junction, on the Metropolitan and Great Central Joint line, which still has the semaphore arm used for many years by the Metropolitan for signals on its open air sections, with a short extension piece to the right of the spectacle casting. This form of semaphore has always been attributed to Austin Chambers, who was associated with the invention and development of interlocking apparatus in the late fifties and early sixties, and became Signal Superintendent of the Metropolitan for a time. The idea was to counteract the effect of snow accumulating on the arm, the extension piece having a horizontal table on top to offer an equivalent surface for a counterbalancing quantity of snow. This made a sort of centrally balanced semaphore, achieving the same result as the Great Northern somersault arm, adopted after the Abbot's Ripton disaster on January 21, 1876. Chambers was a pioneer of pneumatic signalling, and patented in 1874 his bellows-operated signals, used for a time, we believe, at several places on the Metropolitan; these included an electrically-worked valve by which several signalmen could control one signal. He also devised an electric disengager and other devices. The Metropolitan was worked on the block system from its opening on January 10, 1863.

* * * *

"And All Parts"

Neither staff nor public always took very seriously the familiar phrase "and all parts" added to the list of principal towns accessible from a country station. Today these railway outposts, where once the process of extracting any but the most commonplace information involved struggles on both sides of the ticket window akin to that of drawing teeth, are often valuable shop windows of railway service, staffed by men competent and anxious to advise on travel. As far as the L.M.S.R. is concerned the new spirit has undoubtedly been awakened by the propaganda of *Quota News*, which continues in its August issue to give as much prominence as ever to rural enterprise in winning traffic, and by *On Time*, where the importance of branch line punctuality is again insisted upon. The resulting improved service is lifting local passengers out of their stereotyped travel habits, and is making "all parts" a reality to them. At one L.M.S.R. branch line station near London we notice that a formerly unadorned bank sloping up to the back premises of a factory has been transformed by a neat garden plot, where excursion announcements are displayed in a setting of shrubbery and trellis work. Local interest has been stimulated, more trains asked for and conceded, and another step taken towards railway recovery.

Want of Care

The cause of the accident at Tottenham, L.N.E.R., on May 12, Major Wilson's report on which will be found summarised on page 350, was the same as the cause of the great majority of accidents on the railway, as elsewhere—namely lack of care. Here were experienced men, under no doubt about the conditions obtaining on the section of line concerned, and who knew the regulations applying to it perfectly well. Yet they neglected to keep a proper lookout. The fireman, who was supposed to be attending to the driving at the moment of collision, stood where he could see nothing of the track ahead, and his driver failed to recall him to his duty. The result was that a fellow railwayman was killed, and they were fortunate in not being badly hurt themselves. Permissive working must be resorted to on some lines of this kind, and strict attention to rules is essential to the safe conduct of traffic over them. In this case the conditions were constant; there were no signals announcing a clear line at one time and an occupied one at another. The carelessness shown thus seems inexcusable, but there is one satisfactory feature in the story. The men unhesitatingly admitted their fault and made no attempt to excuse themselves or cast blame on each other, which straightforward behaviour naturally facilitated the inquiry.

* * * *

Boosters

A study of the times given in our August 14 issue of an emergency run on the L.N.E.R. main line from Grantham to York, when one of the Ivatt Atlantics of the late Great Northern Railway was compelled, at short notice, to take over a 585-ton train, and with it actually succeeded in gaining time, shows that the only real difficulty experienced by the driver was that of getting his vast train on the move at Grantham. This fact inevitably directs attention to the value of auxiliary power. In America the auxiliary booster engine is frequently fitted to new main line locomotives, and its popularity is clear evidence that booster equipment in that country has reached a stage of reliability and usefulness that justifies the expenditure thus involved. In this country the experiments with boosters have been confined to one railway, and even there it can hardly be said that they have proceeded with any great enthusiasm or persistence; yet the moral of this run appears to be that the usefulness of so successful a locomotive class as the Ivatt Atlantics might be enhanced, and the life extended, by the provision of auxiliary power, for which the 4-4-2 wheel arrangement is so eminently suitable. Booster equipment was once, we recollect, fitted to an engine of this type, but after a short time it was removed.

* * * *

The Value of Research

Some striking observations as to the precision of modern American manufacturing methods were made by Mr. Michael Dewar, a Vice-President of the Federation of British Industries, on his return recently from a tour of American steel mills. He gave it as his opinion that the Americans had developed their rolling mill work in much the same way that machine tool work has been perfected in this country, with the result that evenness and accuracy have been obtained in the production of steel sheets that are within reach of perfection. Mr. Dewar considers that while in general British manufacturers have little to learn in the manufacture of steel ingots, the same could not be said in regard to the handling of the steel after it has been made, and in the circumstances it is not surprising that many heads of British firms are visiting America in order to witness the latest methods of steel manipulation in that country. In particular Mr. Dewar refers to American progress in the technique of alloy steel production, remarking significantly " I would not like to say that they are the best makers of steel in the world, but they are not far short of it." The reason for this superiority needs little stress; it is attributed to " the enormous amount of research work that is carried on in America. They spend far more money on research than British firms do, and it pays them."

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Piping on Locomotives

Mr. P. L. Falconer, in a paper on " Locomotive Piping and Fittings " read before the South American Centre of the Institution of Locomotive Engineers, advocated the use of steel in preference to copper for small pipes on locomotives, such as those of the lubricating system, which have a shorter life than the remainder of the piping. These, when made of copper, are readily damaged by denting, twisting, and wear and need a large number of clips to keep them in position when fastened to the boiler. Many of the connections and unions can with advantage and simplicity be made of steel. For pressure grease lubrication, steel piping has also given the best results. The location of lubricators in an accessible place, and cleanliness, would appear to be the best safeguards against choking of the pipes, filters being a doubtful proposition unless systematically kept clean. Although the paper dealt mainly with the steam locomotive it was pointed out by the author in the conclusion that the electric and diesel engine have similar piping problems. The diesel engine has a considerable amount of piping that presents problems of its own. The high and pulsating pressures in the fuel injection system make it advisable to use heavy steel piping to prevent deformation and undue interference with the injection timing. It would almost seem that any new device for improving the efficiency of the railway locomotive, whether it be a higher boiler pressure, superheating, a feed water heater, a booster, a condenser or a diesel engine, brings with it additional piping and piping problems.

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Discussion on Welded Rolling Stock

A useful discussion followed the reading of a paper entitled " Some Developments in Railway Carriage and Wagon Construction " by Mr. P. L. Henderson at an Institution of Civil Engineers meeting in Birmingham. One of the speakers remarked that no failures of welding had been recorded in the tests described. The failure was always in the woodwork, and it therefore appeared to him advisable that carriages and wagons should be of all-steel construction. With regard to calculations of the strength of the welds from the cross member to the solebars, those for the bending moment were, it seemed, taken on the whole of the welding round the channel section. This hardly seems correct, because in the case of the bending moment the maximum stress is in the welds on the flanges. The safer plan is to calculate the moment of resistance of the section of the welds which connect with the flanges, since if a weld started to crack it would clearly begin at those points. It is very important to base calculations on the portions of the welds which are the most highly stressed, particularly in the case of end standards welded on to headstocks. Recent tests, said the speaker, had shown that weld metal, when subject to vibratory stresses, failed at very much lower values than those found by the ordinary tensile tests. It was therefore essential when dealing with joints subject to such stresses to see that as much of the weld as possible was subject to uniform stress.

XUM

Cheap Travel Developments

WHILE the Ministry of Transport railway returns for 1935 indicate that nearly 41 per cent. of the passenger receipts (excluding workmen and season tickets) was derived from the issue of monthly return or period tickets, they also show that the percentage of passengers carried at day, half-day and evening cheap fares has been steadily increasing each year for the last six years, until in 1935 the receipts from this source reached nearly 33 per cent. of the total, and the number of journeys nearly 70 per cent. of the total. The figures for the present year to April show a still further increase, as the number of journeys at these fares rose by 3,750,000, or nearly 3 per cent. above the corresponding months of last year, representing an increase in revenue of over £160,000. The possibilities of developing this form of travel afford great scope for salesmanship, and much enthusiasm, initiative and enterprise are continually being displayed by the railway companies in this direction. Cheap day tickets to facilitate shopping, &c., are being issued regularly between an ever-increasing number of stations at the single fare for the return journey, equivalent to three-farthings a mile (third class). Day excursion tickets are issued from time to time for special events or party travel at a graduated scale which ranges from 0·6d. a mile for distances of 50 miles, to under one half-penny a mile for distances beyond 110 miles.

Half-day excursions leaving the starting point at or after 11.0 a.m. on weekdays, or 9.30 a.m. on Sundays, are run by special trains throughout the year to the principal towns, holiday resorts, &c., the third class fare being approximately from two to three miles a penny according to distance. First class fares in all these cases are approximately 50 per cent. above the third class. Apart from visits to places of historic or scenic interest by rail, rail and road, or rail, road, and river, the companies are developing a substantial traffic in educational excursions to the works of such famous firms as Morris Motors, Cadbury, Fry, Lever Bros., Ford, &c., while an ever-growing number of people is conveyed to the principal railway locomotive, carriage and wagon shops for conducted tours through the works. Reduced fares are frequently given from surrounding stations for local attractions such as theatres, cinemas, agricultural and flower shows, tattoos, football and cricket matches, while for those holidaymakers who prefer to sleep at home, the L.N.E.R. offers the facility of five excursion trips on consecutive days by Pullman train to different seaside resorts at a low inclusive fare.

One of the latest developments has been the introduction of evening trips into the country and to the seaside at remarkably low fares. On early closing days and selected evenings, special trains are being run, generally after 4.30 p.m., which make fast trips to the seaside or country, allowing passengers two or three hours at their destination. Thus, for example, on three evenings a week seaside tickets at 4s. return are issued from London to Brighton (about 50 miles), while special trains are run on Saturday and Sunday evenings from stations in the north and east of London to Southend-on-Sea at fares ranging from 1s. 9d. to 2s. 3d. return; the fare from Fenchurch Street and Liverpool Street is 2s. return for a journey of about 40 miles each way. In the Midlands evening trips are being run from Birmingham to Blackpool, Nottingham to Skegness; and from Lancashire and Yorkshire towns to coastal resorts. Similar excursions are available in Devon, Cornwall, South Wales and in Scotland, at fares as low as 5 miles a penny. Last summer nearly three million people were carried by the railways on evening excursions and observation tour specials, and the steady development of these facilities is affording abundant opportunities for workers in industrial areas to spend a few hours in the open air at remarkably low cost.

* * * *

Increased French Railcar Services

A CONSIDERABLE augmentation of the already numerous services worked by railcars in France has taken place since the inauguration of the summer timetables on May 15, mainly as the result of fresh railcar deliveries. The numerous *autorail* services on the Paris-Cherbourg and Paris-Havre lines of the Etat have been mentioned in THE RAILWAY GAZETTE already, but within the last week or two the new triple-car 800 b.h.p. Bugatti trains and a 1,000 b.h.p. triple-car Renault diesel train have been allocated to the Havre services, and Bugattis and Renaults have begun the seasonal services from the French capital to Bagnoles. The total daily railcar mileage on the Etat is now 38,800 km. (24,100 miles), an increase of 9,000 km. (5,580 miles) in less than three months. On the P.L.M. the Bugattis are again operating the fast Paris-Lyons return service, following a period when it was worked by the streamlined Atlantic locomotive and train, but a new service has been inaugurated in the opposite direction with one of the twin-car 530 b.h.p. Renault diesel sets. This leaves Lyons at 7.15 and returns from Paris at 18.45, the 511 km. (317-mile) journey in each direction taking 5 hr. inclusive of stops at Dijon and Laroche. The Toulon-Vintimille Bugatti service has been extended to Marseilles, and a new depot has been created at Avignon with six Somua articulated diesel cars. The services on the Lyons-Besançon route and in the Chalons-sur-Saone and Laroche districts have been increased, and 600 b.h.p. Saurer-engined Decauville cars and 56-seater Michelins are working the seasonal services over the Alpine line from Grenoble to Digne, and the larger cars are operating also a service from Grenoble to Marseilles in 6 hr. 20 min. compared with the 7 hr. 48 min. of the principal steam train. The daily railcar mileage on the P.L.M. now amounts to 23,385 km. (14,500 miles), an increase of 48 per cent. since the beginning of the year.

Twelve 265 b.h.p. Renault diesel cars have just been received from the maker by the P.O.-Midi Railway, and have been allocated to the Tours and Bordeaux depots. Those at the former are working to Vendôme and to Loches, and also on the cross-country service from Le Mans to Vichy via Tours and Saincaize, a duty which is shared with railcars of the P.L.M. The Bordeaux cars are used to provide direct services between Bordeaux and Clermont and on stopping trains to Aurillac. The new Michelins on this railway have been sent to the Carmaux shed near Toulouse, for operation between Tournemire and Toulouse and to provide more frequent services between Toulouse and Rodez. Trials of great interest have been carried out jointly by the Est, Nord, and Alsace-Lorraine systems with a 320 b.h.p. de Dietrich car and a 530 b.h.p. Renault car between Lille and Basle, as a preliminary to the inauguration of the fast service later in the year. The distance of 562 km. (348 miles) was covered at an overall running average in excess of 100 km.p.h. (62 m.p.h.). The Nord, in conjunction with the Etat, is operating a cross-country railcar service from Lille to Havre, and this is being worked by the new triple-car 820 b.h.p. diesel-electric trains just set to work. Daily services for the carriage of newspapers have been instituted between Paris, Amiens and Lille, and passenger services from Paris to Compiègne.

The Strasbourg-Basle fast Bugatti service, hitherto operated on week-days only, is now run on Sundays also,

and continues to make the single northward trip to Wissembourg on the German frontier. With the further extension of local services operated by the de Dietrich diesel cars, the annual railcar mileage on the Alsace-Lorraine system has risen by 140,000 km. (87,000 miles) since the beginning of May. Numerous rapid railcar services have been introduced by the Est during the last few weeks, following the acquisition of 20 de Dietrich 320 b.h.p. and Renault 265 b.h.p. cars. Principal among these are (de Dietrich) Paris-Nancy, 353 km. (219 miles) in 3 hr. 15 min., at an average of 108·6 km.p.h. (67·4 m.p.h.); Paris-Charleville, 244 km. (153 miles) in 2 hr. 30 min. at an average of 97·6 km.p.h. (60·6 m.p.h.); Paris-Coulommiers, 72 km. (46·7 miles) in 1 hr. 5 min. at an average of 66 km.p.h. (41 m.p.h.); and (Renault) Paris-Langres, 297 km. (184·2 miles), in 3 hr. 7 min. at an average of 95·2 km.p.h. (59 m.p.h.); and Nancy-Belfort, 183 km. (113·6 miles), in 2 hr. 22 min. at an average of 77·3 km.p.h. (48 m.p.h.). By the steady increase in the use of railcars the French railways are progressively improving their passenger train facilities not only on main lines but also on local, branch, and cross country sections, and are thus retaining much traffic that otherwise might seek different channels. Indeed, it is probable that by this enterprise the railways are actually creating new traffic.

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Tanganyika Railways

THE Tanganyika Railways consisted at December 31, 1935, of 1,376¼ miles of metre gauge line in two main sections, without physical connection with each other. On the Central Railway the main line of 775 miles runs from the port of Dar-es-Salaam on the Indian Ocean through Manyoni and Tabora to Kigoma on Lake Tanganyika, and a branch of 235½ miles leads from Tabora northwards to Mwanza on Lake Victoria. There is also the Manyoni-Kinyangiri branch of 93½ miles. The Northern (or Tanga) Railway of 272¼ miles proceeds from the port of Tanga to Moshi and Arusha, and makes a connection with the Kenya & Uganda Railways. Steamer services on Lake Tanganyika, and wharves at Dar-es-Salaam, Tanga, Kigoma, and Mwanza are under the same administration as the railways. Stations not now provided with staff number 40 out of a total of 111, but traffic is accepted at these stations by the guards of trains.

The report for the year 1935, which we have recently received, shows that the decrease in traffic to and from the Belgian Congo continues. This decrease is apparently due to the break in exchange of the Belgian franc, the development of the movement "Par la voie Nationale," and through invoicing from Europe into the Congo at rates of which no exact information had been obtained. Many alterations in rates and fares were made during the year, including certain rate changes necessary to assimilate with the Kenya & Uganda Railways at Mwanza and Moshi. The gradual but continuous increase of net earnings since 1931/32 has been well maintained, but the report emphasises that earnings were high owing to a combination of favourable climatic and economic circumstances which is unlikely to be repeated and that, as an inheritance from the years of depression, expenditure on maintenance is still kept below its proper margin. On the total estimated cost of the combined system, *i.e.*, £9,916,990, the net earnings give a return of 3·14 per cent., and on the British capital raised, *i.e.*, £5,044,421, the return is 6·17 per cent. These figures, however, omit the fact that, up to date, no contributions have been made to a renewals fund. Nevertheless, even if the sum of £112,400 estimated as the legitimate contribution towards renewals for 1935 were deducted, the return would still stand at 2·01 per cent. on the total and at 3·94 per cent. on the British capital commitments. Except where otherwise stated, the figures in the accompanying table refer to railway operations only:—

	1935	1934
Passengers	295,008	221,295
Tons, revenue earning	235,776	220,065
Ton-miles ,, ...	52,451,416	43,672,558
Train miles ,, ...	679,873	592,285
Operating ratio, all services ..	52·98 per cent.	64·71 per cent.
	£	£
Coaching revenue	83,435	76,542
Goods revenue	479,583	397,978
Gross receipts	594,159	505,229
Expenses	317,944	331,705
Net earnings	276,215	173,524
Other services (net)	35,161	26,141
Interest charges, all services ..	322,435	323,919
Net loss, all services	11,059	124,254

The Sentinel car service with two cars brought into operation between Tanga-Korogwe-Mombo on December 19, 1934, enabled the railway to recapture a great deal of the native passenger traffic previously lost to lorries. This service contributed in 1935 £5,165 to passenger revenue. The seven Sentinel shunting locomotives in use on the Central line and one on the Tanga line continued to give good service with marked economy in maintenance, fuel, and water consumption. Of a total of 45 engine drivers employed on December 31, 1935, eight were Europeans, twelve Asiatics, and 25 Africans. Tempered rail joint shims have been inserted from km. 286 to 298 on the Tanga line with considerable success. Building up of worn crossings by electric welding has been carried out in the Dodoma district and a start made in the Tabora district. The road-rail controversy is still far from a final solution. On the other hand, an experiment is being made with a 15-ton road unit which is to initiate a branch service into the newly-developing Kahama goldfields.

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Economics of Locomotive Repairs

THE maintenance of large numbers of locomotives in an adequate state of repair must, in any circumstances, be a costly business. Closely associated with it is the problem of the replacement of existing types by others more modern; in other words, the length of time a locomotive can be kept in service without economic loss even though it may appear satisfactory for its work. Reviewing the subject from the point of view of American railways, Mr. Robert S. Binkerd, Vice-President and Director of Sales of the Baldwin Locomotive Works, in an article appearing in the current issue of the house organ of that concern, presents some well-reasoned arguments respecting this phase of locomotive operation. After stressing the fact that locomotive repair costs must inevitably rise with increasing physical age of the engine, he says that as a practical proposition it has been found that a locomotive purchased at today's prices and making an average of about 45,000 miles a year, can be scrapped at the end of its twenty-first year, and a new duplicate paid for out of savings in the cost of repairs that would have been entailed were the first engine to be kept at work during the ensuing twenty-one years. Any increase in the average annual mileage would shorten the economic life; in other words, if there had been no improvement in locomotive construction whatever, each twenty-one year old locomotive, under the conditions named, could still be replaced by a new duplicate at no ultimate increase in cost.

Exact duplicates of twenty-one year old locomotives are, however, seldom purchased. The buyer of a new locomotive, even one with the same weight on the coupled wheels, would naturally want to take advantage of the

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increased steam pressure and superheat, larger boiler and firebox, and other modern refinements that now go to produce increased tractive power at high speed. These improvements result in the ability to turn out many more revenue ton-miles or revenue passenger-miles per locomotive-hour and per lb. of coal and water. The additional savings thus brought about reduce the time required to pay for the new locomotive from twenty-one years to a half or one-third of that time. If to these are added operating measures designed to produce the highest possible monthly mileage out of the new engines, conditions are sometimes created where entire fleets of locomotives pay for themselves in one, two, three or four years, and continue to pay for themselves over and over again. Many modern American locomotives are averaging more than 10,000 miles a month, and in specific instances such locomotives have made more than 18,000 miles in a single thirty-day period. Figures produced by Mr. Binkerd show that locomotive repairs over a certain number of years represented, for the Class I railways, 6·9 per cent. of total operating revenue and 9·5 per cent. of total operating expenses, and owing to the recognised under-maintenance which has prevailed through the past several years, these figures have not shown any improvement.

The proper method of controlling repair and operating expenses of locomotives lies in a capital investment policy which systematically adds new engines to the top of the inventory and retires from the bottom those that have passed the age of economic usefulness. From the facts disclosed the turnover should obviously not be less than once every twenty-five years, and could more profitably be fixed at once in every twenty years. Under such a programme of purchases and retirements, locomotive repair costs could be stabilised on a level not higher than two-thirds of that which the railways are now paying, and there would also be radical reductions in the expenditure on fuel and water. It is impossible to estimate with accuracy all the economies which would result from the replacement of obsolete locomotives with modern types properly designed for the service. In addition to the savings enumerated, there is a further economy due to the fact that the increased hauling and speed capacity of the new units makes it possible to handle the same traffic with fewer of them. The number of freight vehicles can be reduced, since the lower number hauled at high speed will produce the same number of car-miles and therefore handle the same amount of revenue freight. A policy of "longer runs by fewer locomotives" also simplifies the arrangement of shed and shop facilities required, and the result of these advantages is a reduction in the capital investment as well as in taxes, insurance, enginemen's wages and other incidental expenses.

Mr. Binkerd holds that modern locomotive results cannot be obtained by the repair, and attempted modernisation, of old or economically obsolete engines. One of the outstanding advantages of the modern locomotive over those built twelve or fifteen years ago lies in the potential horsepower of the boiler, which permits sustained high speeds with heavy loads. Modern designs provide this high capacity by utilising practically all the allowable weight and space for the boiler and firebox, using four-wheeled trailing trucks if necessary to carry the additional weight. In conclusion he points out that the railways today are endeavouring to speed up their traffic to compete with other forms of transportation. Great strides in this direction, he says, can be made by weeding out the physically old and economically obsolete locomotives, and replacing them with a smaller number of engines of modern design. By taking full advantage of the increased capacity and lower operating costs of the new locomotives, much lost traffic can be regained with a more than proportionate increase in net operating income.

LETTERS TO THE EDITOR

(*The Editor is not responsible for the opinions of correspondents*)

The London—Brighton Main Line

The Railway Club, 57, Fetter Lane, E.C.4
August 22

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—About four years ago the Southern Railway began work on what was evidently intended to be a long running crossover between the main London-Brighton line, via Quarry, south of Quarry tunnel, and the line via Redhill, just north of Merstham station. The junction on the Quarry line would have faced towards London. For some reason the work was suspended after a few weeks and never completed.

On the evening of August 11 heavy rain caused a slip in the cutting north of Merstham (Old) tunnel. All trains were diverted via Quarry to Earlswood, and Merstham, Redhill, and the Reading and Tonbridge branches were reached with considerable difficulty and delay. Had the connection at Merstham been available, much of this delay could have been obviated. Slips are not uncommon north of Merstham tunnel. When they occur, the need for the connection becomes very obvious.—Yours &c.,

H. A. VALLANCE

[The construction of a junction between the old and the new lines near Merstham would be a costly undertaking. Although it is the only place not served also by the Quarry line (for Redhill is accessible from Earlswood, so that the Reading and Tonbridge branches can be reached with reasonable ease in case of emergency) Merstham is already liberally provided for under ordinary conditions by an intensive electric service. Such a junction would therefore have only an emergency value, and as emergencies are, we think, not so common as our correspondent would suggest, the cost of its construction, and even more so, of its maintenance, including signalling, would appear to be scarcely justifiable under present conditions.—ED. *R.G.*].

Portable Electric Tail Lamps

Bombay, August 6

TO THE EDITOR OF THE RAILWAY GAZETTE

SIR,—On page 248 of your issue of February 7 last, you described and illustrated an electric portable tail lamp used on the Great Indian Peninsula Railway, and to this reference was made in the editorial entitled "The Second Line of Defence" in your issue of July 3, with the remark that " . . . . so far we have had no report as to whether it is giving satisfaction in service."

I have pleasure in advising you that six of the portable tail lamps described therein have been utilised on fast passenger trains on this system during the last six months, and proved to be both efficient and economical in service; and an undoubted improvement, when compared with oil tail lamps. It is considered that the adoption of these lamps is justified both by oil economy and the possible reduction in the number of lamps required for service, and the only obstacle in the way of their universal introduction is the question of the attachment of unwired vehicles, at times, to certain rakes.—Yours &c.,

E. L. ENSOR,
Officiating Deputy Transportation Superintendent, Telegraphs, G.I.P.R.

PUBLICATIONS RECEIVED

The News and Advocate, St. John's, Quebec : Canadian Railway Centenary Number.—To mark the centenary of the first public steam-operated railway in Canada—the Champlain & St. Lawrence Railroad—*The News and Eastern Townships Advocate*, which is published at St. John's, Quebec, by the E. R. Smith Co. Ltd., presented with its issue for Thursday, July 16, a special 8-page supplement. It sets out the history of this pioneer line and includes reproductions of early time-tables and other historical illustrations. As the Champlain & St. Lawrence Railroad is now part of the Canadian National Railway system, it is interesting to note that Mr. S. J. Hungerford, the present President of the Canadian National Railways, hails from that part of Canada served by the 1836 line.

The Lynton & Barnstaple Railway, 1895-1935. (Second Edition). By L. T. Catchpole. Sidcup, Kent : The Oakwood Press, 19, The Drive. 8 in. × 5½ in. 67 pp. + coloured frontispiece, inset illustration plates, and one folding drawing. Price 3s. 6d. net.—It is almost a year since the Southern Railway closed the narrow-gauge (1 ft. 11½ in.) Lynton & Barnstaple railway, but the widespread public interest which was evinced at the time of closing still survives to the extent of necessitating a second edition of Mr. Catchpole's historical and descriptive volume. The first edition appeared in March of the present year, and proved extremely popular; in fact, Mr. Catchpole so thoroughly caught the local atmosphere of North Devon as to justify the *North Devon Journal* in describing the original edition as "a notable and friendly memorial . . . most profusely and attractively illustrated with a very fine series of pictures . . . a book that cannot fail to interest every North Devonian."

The second edition naturally follows the general construction of the original work in describing the early schemes for linking Lynton with the main railway system of Great Britain, the eventual adoption of the Lynton & Barnstaple route, and the construction and the opening of the line. It then describes the route, the progress of the railway and its equipment, the acquisition by the Southern Railway, and the final closing and sale. Quite a number of important improvements have been made in the present edition, both in the typography and layout and also in the text. A larger size of page has been adopted which has permitted more adequate display of both type and blocks, and the paper used is a distinct improvement on the first edition. Through the courtesy of Sir Frank Newnes a reproduction is included of an illuminated address presented to the Chairman and Directors of the railway company by the Bratton Fleming Parish Council, and Manning, Wardle & Co. Ltd. has supplied drawings of a six-coupled locomotive in the condition as originally supplied to the line, together with details of the valve gear; these drawings are reproduced as a folding plate. Mr. Catchpole is to be congratulated not only upon his painstaking work in presenting the story of this line in most interesting and readable form, but also in having correctly gauged public taste to an extent which has justified the production of a second edition inside five months of the appearance of the original work.

Stellwerks and Blockanlagen (Interlocking and Block Installations) Heft 3, Kraftstellwerke (Part 3, Power Signalling). Berlin : VWL Gesellschaft, Columbushaus, Potsdamer Platz, W.8. 8¼ in. × 6 in., 247 pp. Numerous designs and illustrations. Price, post free abroad, 2·05 RM.—This is the third part of a set of instructional books, the first two of which were noticed in our issue of June 24, 1936. It is of the same high class and gives an admirable introduction to a study of the principal types of electric power signalling apparatus in use on the German State Railway, exclusive of those which are no longer to be installed. Intended for students entering the service, the detailed information is kept within certain necessary limits, but an excellent understanding of the principles of working is conveyed as well as of the construction of lever frames, with their fittings, point and signal motors, and some accessories. The greater part of the text is devoted to the 1912 type of apparatus made by the Vereinigte Eisenbahn-Signalwerke (VES), the working of point machines being very clearly explained with the aid of excellent diagrams; the circuits and locking arrangements in the frame are set out, stage by stage, in full detail, so that there is no difficulty in understanding every movement. The method of drawing circuits, now generally used in Germany and originated by the late Dr. Robert Pfeil, is explained. Signal operation is equally fully described, but light signals, as yet used only in a few installations, chiefly on the Berlin local lines, are not dealt with. Other subjects covered are the connection between the lever frame and block apparatus; control between signal boxes; and route and point locking. The method of numbering the various contacts and terminals and indicating them on wiring plans is explained, with a complete set of diagrams indicating the process of receiving and despatching a train at a station with two signal boxes.

The power signal system due to Orenstein and Koppel is next dealt with, with the pecularities of the novel point machine and circuit scheme made clear and a number of diagrams. This is followed by an account of the point operating circuits and certain other features of the Scheidt and Bachmann system, and a brief outline of the multiple-row type of power frame, due to the VES works, of which several examples now exist and which will no doubt be more and more used. A list of circuit symbols, a set of 137 questions on the subject matter, and a reference to other works conclude the volume, which may be warmly recommended to all students of the subject. The printing leaves nothing to be desired. The three parts of this series together enable anyone to get a thorough understanding of the essentials of German signalling methods.

Cannes.—The Syndicat d'Initiative de Cannes has published an illustrated folder enumerating the attractions of the resort for holidaymakers of all tastes. Included is a picture map of the surrounding country, showing the proximity of Cannes to such well-known tourist centres as Vence, Grasse, and the Gorges du Loup. "Cannes," says the folder, "remains essentially the aristocrat of watering places, somehow preserving the charm of old Provence amidst the influences of Bond Street and the Rue de La Paix." In spite of these attributes, the resort is able to show very moderate rates at hotels of all categories from the luxury to the family class.

History Land.—It is not often that a holiday guide so conscientiously and vividly recreates historical past and the picturesque present as does this publication of the Northern Railway of France. It is divided into two sections, one giving a broad survey of the country served by the system, and the second dealing in greater detail with the larger towns. Throughout, there are many finely reproduced photographs of landscapes and architecture, and, while copious in its information, the booklet avoids alike the heavy formality of the detailed guide, and the unconvincing rhetoric of some other publications of its own class, which seem to place a less flattering estimate upon the credulity of their readers.

High Tensile and Rust Resisting Steels.—Ducol high tensile and Dalzo rust resisting steels, products of Colvilles Limited, 195, West George Street, Glasgow, C.2, are the subjects of two new illustrated catalogues. That dealing with Ducol emphasises its saving in weight compared with mild steel, and recommends it to the locomotive engineer as a means of allowing him higher boiler pressures without heavier engines or a decrease in the factor of safety. Ducol is also used with similar advantages of lightness and strength for locomotive frames, while in the construction of mineral wagons it has led to savings in weight of up to 45 per cent. Mineral wagons also figure in the Dalzo booklet, the corrosion resisting properties of the metal being of value in resisting the attacks both of the atmosphere and of the sulphur content of coal. For similar reasons, it is particularly suitable for locomotive tenders. Both catalogues give all the data relative to physical and mechanical properties which are necessary for prospective users.

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THE SCRAP HEAP

BANQUET FOR FIFTY NATIONS IN A RAILWAY STATION

The 3,000 delegates representing some 50 nations who are visiting Washington next month for the Third World Power Conference will take their seats at their official banquet—in the railway station waiting-hall. The reason is that there is no other place big enough for such a banquet anywhere in the American capital. So on September 10 the long rows of benches in the station hall will be removed and dining tables will be arranged in their place.

* * *

HOW THE PASSENGERS WARMED THEIR HANDS

The following paragraph appeared in December, 1843:—

A few days ago a train was run on the York and North Midland Railway tender first, and there was no truck or van between the engine and the passenger carriages. A third class carriage was so near to the engine that the passengers warmed their hands on the engine chimney! The train ran thus from Normanton to Castleford.

* * *

How easily that is accomplished now, which a few years ago would almost be considered miraculous. Prince Albert, for instance, left town at half past seven o'clock yesterday morning for Bristol, and was back the same day for dinner. This in itself is a tolerable exploit; but when, in addition, his Royal Highness received an address at Bath, witnessed the launch of the *Great Britain* at Bristol, and visited Clifton, astonishment is succeeded by wonder. His Royal Highness was at Clifton at half-past four, and in London at half-past seven.—*From the "Cheltenham Looker-On" of July 29, 1843.*

* * *

Passengers travelling in the Bournemouth district may have observed a comparatively large stone cross in the embankment level on the up side at a spot situate between New Milton and Sway, Southern Railway. A similar—but less conspicuous—cross may be seen on the down side at a distance of about 100 yd. from New Milton (on the Sway side). These memorials indicate the scene of fatal accidents in which members of the permanent way staff were involved in past years; the crosses are kept in a clean condition by the present staff.

* * *

A farmer had made a claim against a railway company for a colt killed on the line.

"And how much would you say this colt was worth?" asked the railway representative appointed to investigate the claim.

"Not a penny less than £200!" declared the farmer.

"Pedigree stock, I suppose?"

"Well, no. But you could never judge a colt like that by its parents."

"No," the investigator agreed, "I've often noticed how crossing it with an engine will improve a breed."

* * *

Entering the train at an East Lancashire station he stumbled over an elderly lady near the door, trod on the foot of a girl, and half knocked off the hat of another woman. Sitting down he pulled out a book entitled "The Law of Nuisances."—*From "The Manchester Guardian."*

* * *

MOTORCARS ON RAIL

"Every road is flooded, and great stretches have been washed away!" That was the news that greeted motorists in a little town in Western America not long ago, just after several very heavy storms.

As it happened, there was a large number of visitors in the place—drawn to it by three days of important meetings that were now finished. "We've got to get away somehow!" they told one another. "What about cutting across country?" "Quite impossible: the ground's much too soft!" said those who knew the district.

Then one of the victims had a bold notion. "The railway runs on an embankment for miles, and there are very few trains," he said. "Let's see if we can get permission to use the track!" After some difficulty it was decided to allow cars to make their way (if they could) along the top of the embankment during certain hours of the next three days. Many of the stranded motorists risked the experiment, and were successful in escaping, though the task proved more difficult than they had expected.

Then a small group of engineers, struck by this performance, made tests. Using a car with balloon tyres exactly as far apart as the rails, they discovered that progress was easy and safe—so long as no attempt was made to steer. The tyres "sat" comfortably on the metals, and held to them because of a slight bulging on either side.—*From the "Evening News."*

It's just that little bit of extra precaution which *You* can take that makes a satisfied customer

Rain makes the flowers beautiful—

But our bouquets come in by keeping wet out

No. 7 of a series of "claims prevention" posters recently issued by the Chief Goods Manager, Great Western Railway, for exhibition to the staff

On Wooden Rails

A view, for which we are indebted to Mr. W. A. Robertson, Director of the Forest Products Research Laboratory at Princes Risborough, showing a veteran steam locomotive which has been at work for about 50 years in the Langley Vale Concession, New South Wales. The track consists of squared hardwood timbers spiked direct to the sleepers

OVERSEAS RAILWAY AFFAIRS

(From our special correspondents)

INDIA

Indian Rivers in Flood

Most of the rivers in the United Provinces and Bihar are in abnormal flood, and it is reported that some 500 villages are submerged, necessitating the evacuation of the population from certain areas. The Elgin bridge across the River Gogra in Oudh, about 40 miles from Lucknow, is under water, and all railway traffic over the bridge has been suspended. Elsewhere, though road communications in the submerged districts have been dislocated, there is, so far, no serious interference with railway transport.

Cochin Harbour Development

On August 1, the Government of India declared Cochin Harbour a major port, and the fourth stage of development of the harbour has now been taken in hand, funds for the various works being allotted by the Cochin and Travancore Governments. One of the main items in this stage is the construction of a combined railway and road bridge from Ernakulam to Willingdon Island. The railway line will also be extended from Ernakulam across the backwater to Willingdon Island. Preparations are being made for the formal ceremony of laying the foundation stone of the rail-road bridge, on August 13, by His Highness the Maharaja of Cochin.

Jamnagar and Dwarka Railway Results

The working of the Jamnagar and Dwarka Railway for the year ended March 31, 1936, shows that the net earnings have increased from Rs. 6,36,332 in 1934-35 to Rs. 6,88,470. The gross earnings, amounting to Rs. 14,77,797, are less by Rs. 13,117 than in the previous year, but the deficit is more than balanced by the substantial saving of Rs. 65,255 in the working expenses, which amount to Rs. 7,89,327. The administration deserves much credit for its persevering search for economy in expenditure.

Commercial Interests Oppose Rates Enhancements Scheme

The commercial organisations in Calcutta are unanimously opposed to the proposal made by the Indian Railway Conference Association for enhancing the class rates for certain commodities. It is argued that though there are grounds for a general revision of classification of commodities, it is difficult to justify the selection of certain articles for re-classification with a view to the enhancement of the rate of transport. Even if the necessity for an increase in rates is admitted, this object can be achieved by raising the rates within the present permissible maximum. A change of classification on any large scale, it is maintained, should be resorted to only when there is a definite case made out for alteration in the relative position of each commodity *vis-a-vis* other commodities in the rates structure. It is further contended that in the present condition of trade and industry in the country, it would be extremely unwise to attempt to raise the effective rate for the transport of a large number of commodities. Such enhancement might drive traders and industrialists to alternative forms of transport, where these are available, or induce them to seek markets with better transport facilities. In either case the railways stand to lose.

It is understood that Sir Guthrie Russell and Mr. P. R. Rau recently discussed the proposal for the enhancement of rates with Calcutta business men. Some of the chambers of commerce are reported to have urged that if an enhancement of rates is absolutely essential, the increase should be confined to articles which can be described as luxuries, leaving alone necessities such as foodstuffs, agricultural implements and raw materials for industries.

SOUTH AFRICA

Extension of Airways Services

Considerable development of the administration's airways services is forecast by the Minister of Railways and Harbours. The services are gradually being built up to provide the following out and return services: daily between the Rand and Delagoa Bay, with a possible reduction in the summer months; twice-daily between the Rand and Durban; daily between the Rand and Capetown, Durban and Capetown and Bloemfontein, East London and Port Elizabeth; twice-weekly between the Rand and Windhoek via the Bechuanaland Protectorate, as well as twice-weekly between Kimberley and Windhoek. These extensions will necessarily be spread over a number of years owing to the need for training the staff, the acquisition of machines and the perfecting of ground organisation.

UNITED STATES

Further Electrification Proposed

The Federal Power Commission has recently published a " National Power Survey " which is a study of potential uses of greater electrical energy in the United States, and among the opportunities for such use the commission has cited 5,429 route-miles of railway (12,000 track-miles) which, in its opinion, might conceivably with profit be electrified. Among the lines suggested for such improvement the commission includes the New York Central from the New York City suburban zone to Buffalo, the Pennsylvania from Philadelphia westwards to Pittsburgh, the New Haven Railroad from New Haven to Boston, heavy grade sections of the Boston & Maine, Erie, Lackawanna, and mountain districts of several Southern and Western lines. Little interest seems likely to be displayed by the railroads in this proposal. However, the extension of publicly-owned electric power is one of the major policies of the Roosevelt administration. If it should be returned to power in the November election, it is conceivable that the ultimate effect might be electric power at such low rates (in part subsidised by taxation) that a considerable widening of its use might follow.

Orders for Rolling Stock

The volume of orders for new freight rolling stock continues to increase and by comparison with last year is remarkable. On July 1 the following locomotives and cars were on order in the years 1934-5-6:—

	1936	1935	1934
New locomotives—			
Steam	67	6	40
Electrical and diesel	23	22	107
New freight cars ...	28,089	2,428	17,813

During the first six months of these years the following vehicles were placed in service:—

	1936	1935	1934
Locomotives—			
Steam	18	25	1
Electric and diesel	11	81	8
Freight cars ...	11,604	1,868	5,362

The electrification of the Pennsylvania main line accounts, no doubt, for the high figures of electric locomotives in 1934 (orders) and 1935 (placed in service).

An Unusual Submersible Bridge

The Missouri Pacific Lines have recently completed an unusual bridge across the Nueces river near Uvalde, Texas. The former bridge at this point was completely destroyed in June, 1935, by a torrential flood, and previous floods also had seriously damaged the old structure. The terrain does not permit the construction of a bridge at a high enough level to avoid all possible floods, except at prohibitive cost; so the railway has adopted the alternative of building a structure which will withstand submergence at high water velocities without damage. Rainfall in this area is normally light, 20 in. to 25 in. annually; but the section is also subject to infrequent torrential downpours and, partly by reason of the sparse vegetation, the run-off is very rapid.

The new bridge is of reinforced concrete construction and consists of 23 spans, each 23 ft. 3 in. long, centre to centre of piers, giving a total length of 534 ft. 9 in. between abutment faces. The bed of the stream consists of a tough asphaltic rock, and into this the bases of the piers were set to

a minimum depth of 4 ft. The excavations for the piers were made by hand with a minimum of disturbance to the native rock bed, and these excavations were completely filled with the footing concrete. The spans, consisting of 3-ft. reinforced concrete slabs, are each cast integral with a pier at one end, and at the other are recessed or cradled into the pier to prevent lateral movement. Also at the free or expansion end of each slab, longitudinal alignment is ensured by the use of five smooth-rod dowels 1 in. in diameter, which fit into and are free to move in galvanised cast-iron pipes embedded in the next slab. The rails are set in anchor tie plates, preventing both longitudinal and lateral movement, and these in turn bear on anchored masonry plates which distribute the wheel loads on the slab. The line on the approaches to the bridge has been anchored in place by rails driven into the ground on both the upstream and the downstream sides.

Safety in Deep Immersion

The rail level of the new bridge is 23 ft. below that of the bridge which was destroyed, and the bottoms of the slabs are only about 8 ft. above the bed of the stream, in which normally there is but little water. One purpose of making the new bridge so low was to put it below the point where driftwood could injure it—the drift being dangerous only at a flood level far above the decks of this new bridge. By building a comparatively inexpensive structure which will meet all normal requirements, the railway has saved the capital outlay for a structure which would have been above the highest known flood waters, but which, by comparison, would have involved 680 ft. of steel spans and 1,760 ft. of trestle approaches.

FRANCE

Nord Special Wireless Train

Some more details of the Northern Railway wireless-equipped train [previously described in our issue of June 5. —ED. *R.G.*] which is used for special purposes and entertainments, are given in *The Electrician*. It consists of a ten-coach set with two gramophone pick-ups and wireless reception, connected with 80 loud-speakers. The studio is in a brake van containing controls and duplicate amplifiers, microphones and other equipment. Each amplifier feeds 40 loud-speakers by an a.c. connection from a motor-generator set, taking its current from batteries or from the train-lighting supply; the second amplifier and 40 loud-speakers are a stand-by in case of failure.

In one coach, only three compartments are retained, the remainder being converted into a dance hall. The microphones may be connected with any compartment, so that when the train is used for a convention, speakers can talk from their own compartments, while the chairman presides from the studio. The loud-speakers are arranged in the roofs of compartments, or just below that of the dance hall. Parallel aerial antennæ run along outside the roof of the studio car. Special equipment was found necessary to combat vibration and to feed so many loud-speakers.

SPAIN

Provisional Nationalisation

The Madrid *Gazette* of August 4 publishes a Decree providing for the taking over provisionally, and with the "collaboration" of the railway workers, of the working of the principal Spanish railways. The lines to be taken over are those of the Northern of Spain, the Madrid Zaragoza and Alicante, the Central Aragon, and that part of the National Western not yet belonging to the State, the whole to constitute one single system with the Andaluces Company's lines, which, it will be remembered, had already been taken over some months earlier. The Decree provides for the formation of a Committee of Management, formed of six representatives of the Government and six representatives of the railway workers. This committee is to be endowed with all the faculties and attributes of the directors and managers, and the boards of directors of the companies, as well as the general managers' are suspended *sine die*. [See also article on page 337 and map on page 336.—ED. *R.G.*]

TURKEY

Progress and Prospects of New Constructions

According to the Minister of Public Works, the following is the position with regard to the various extensions now in hand. The Filyos-Eregli line, along the Black Sea coast, will not be completed to Zonguloak before the end of 1937, as the country traversed is very difficult and will necessitate the boring of numerous tunnels, and the building of many other heavy works. Meanwhile, every effort is being made to finish and open the first 13 km. as far as Catalgzi by the end of this year so as to tap the coalfield there. This is specially important as certain proposed industries in Inner Anatolia require cheap coal, which must therefore be railed from this coalfield, and the latter is also all-important in case of war.

The construction of the great East-West connection between Sivas and Erzerum, originally intended to be finished in 1940, is to be accelerated, work being begun from the Erzerum end also. The earthwork is to be completed to Divrik in 1937, and to Erzincan in 1938, so that the length as far as Erzerum can be opened for traffic in the summer of 1939. This line will be of importance for trade with the north of Iran, now solely dependent on connections with Russia.

The Sivas-Cetinkaya-Malatya connection between the Inner Anatolian network and the Southern system, formerly intended to be opened by 1937, is now expected to be completed earlier, as the route has been shortened. This line is of considerable strategic and economic importance.

In connection with the projected line to shorten the distance by rail between Ankara and Istanbul, a survey is now in hand by the Public Works Department. It is understood that the new line will run from Adapazar (near Arifie) via Duzje, Bolu, and Kizidjaman to Ankara, and that when completed it will enable expresses to be run between the new and old capitals in 8 instead of the present 13 hours.

CHINA

Nanking-Shanghai Railway

The administration of this line is preparing plans for the inauguration of a greatly accelerated express service between the two cities, whereby the present six-hour schedule will be reduced to 4 hr. 20 min. Special locomotives are, it is reported, being ordered from Europe for the purpose.

Soochow-Kashing Train Service

As from July 15, four trains each way have been running daily over the Soochow-Kashing chord line. There are six intermediate stations between the terminal junctions—with the Nanking-Shanghai and the Shanghai-Hangchow-Ningpo Railways respectively—and the over-all time taken by all trains is 2 hr. 55 min. for the 75 km., the trains being "mixed" so that time for shunting at intermediate stations is necessary.

Canton-Hankow Railway

Two bridges which were damaged when this line was bombed during the recent Nanking-Kwangtung fighting have been repaired, and it is expected that through traffic will be inaugurated on October 10. The head office of the line is to be officially opened at Wuchang (Hankow) on August 1.

Miscellaneous Items

The latest news from Kwangtung reports that the section of the Canton-Hankow Railway in that province is being guarded by a force of 70,000 Nanking Government troops under General Chen, as a precaution against any misbehaviour on the part of the Kwantung army.

Construction work upon the new Szechwan Railway from Chengtu to Chungking is to begin on August 1.

Lung-Hai Railway Developments

The train service on this line has now been considerably improved, both in point of speed and frequency, and the new trains make the journey from Hsuchow to Sian and *vice versa* in a time six hours shorter than previously. The comfort of travel has also been greatly enhanced by the placing in service of the five new trains

recently received from Europe [referred to in our issue of July 10, page 47.—ED. *R.G.*]. With their green livery and generally smart appearance they are greatly admired.

This railway is also building several fine stations. One of these, at Sianfu, is said to be very imposing with its broad platforms, green tiled roof and vermilion pillars. Another is under construction at Lienyun the eastern terminal of the line and port of Haichow city. Large dining rooms, waiting and booking halls are features of this extensive structure.

Eastern Terminal Arrangements

The temporary harbour here is now practically complete and is the forerunner of a much more ambitious project of the future, when the Lung-Hai Railway has been extended and extended westwards as a great trunk route into Central Asia. Set in magnificent scenery, this new port is rapidly being developed and equipped with everything modern, including a water supply brought from beyond the surrounding mountains. The enterprise of the Lung-Hai Railway administration is most laudable and its foresight deserves success.

NEW ZEALAND

The East Coast Railway

Preliminary arrangements for the continuation of the construction of the East Coast railway, North Island, are now well in hand. During the period when the work was abandoned, the line deteriorated rapidly, but it is now being cleared, and the damage done by the 1931 earthquake is being made good.

The most important work is a high viaduct spanning a gorge at Mohaka; it is 900 ft. in length and 310 ft. high above the river bed. Steel trestles will carry the girders, and the bases for these towers were completed some years ago; the steelwork also was fabricated, ready for erection, but has been kept in good order by painting from time to time.

Power transmission lines have been extended to the various camps and tunnel faces, as electric power is to be used as far as possible to eliminate the expense of imported fuels. Instructions have been given that each worker's hut or tent is to be fitted with a lamp socket and a point from which power may be drawn for a radio set, so as to encourage workers to instal radio sets for the dual purpose of entertainment and instruction.

Other Constructions

In the South Island work is to be re-commenced on the Main Trunk and another line on the West Coast between Westport and Inangahua, and these works, together with that on the North Island East Coast, is expected to provide full-time employment for over 3,000 men. A Railways Board report, presented in 1931, estimated the cost of completing the South Island Main Trunk line at £2,300,000, and stated that on the most optimistic view, the annual loss on the line would probably be £99,000. However, the present Government justifies the expenditure, on the ground that railways should be credited with the land values they create. It has also been made clear that in return for railway extensions, residents will be expected to use the railways in preference to other forms of transport. In fact, it has even been hinted that an attempt may be made to make such preference mandatory.

BRAZIL

Governor of State of São Paulo on the Railway Situation

The annual message of the Governor of São Paulo remarks upon the improvement of the Sorocabana Railway revenues in 1935 as compared with the budget estimate, due to increased cultivation and to the better equipment of the line. The Government had placed in service; 8 new main-line and 8 shunting locomotives, and 100 new vehicles during the year, and a record gross revenue of 104,820 contos had resulted, a figure higher than that in 1934 by 18,504 contos. Expenditure amounted to 85,574 contos, so that there was a credit balance of 19,246 contos.

Continuing, the message points out that the construction of the Mayrink-Santos line—capital expenditure on which, excluding interest, had in 8 years totalled 260,592 contos—was nearing completion. Its length up to the junction with the Santos-Juquiá line at Samaritá was 134 km., and 109 km. (96 km. on the Mayrink and 13 km. on the Santos side) were already in use. The engineering works included 32 tunnels, with a total length of 5,003 m., and all but one of these were finished.

Possible New Extensions

With regard to railway development in general, the Government had turned its attention to the rich area situated to the right of the river Tieté, the principal part of which was served exclusively by the Araraquara Railway (E.F. Araraquarense); the advisability of extending this system from Mirasol towards the river Paraná was, the Governor said, being debated. The exact route had not been selected yet, but if, as was probable, it followed the right bank of the São José dos Dourados river, the new extension would be approximately 216 km. in length. The construction of a branch line, to leave the main system near Santa Adelia and serve the watersheds of the Tieté and São José dos Dourados rivers, was also being studied.

A more complex problem was the railway situation in the area between the Tieté and Paranapanema rivers, in which two large systems, the Sorocabana and the Paulista, were both concerned. The establishment between them of an Improvements Association for the rehabilitation and re-equipment of the North-Western Railway (E.F. Noroéste) was decisive in solving this important economic problem. By this act the State of São Paulo and a well-known private company had co-operated for the sole purpose of assisting a railway belonging to the Federal Government, and, what was equally important, assisting another State in the Union, Matto Grosso. It was, moreover, carried out without onus or restrictions, and one result was the normalisation of the competition between the Paulista and Sorocabana at their common junction with the Noroéste in Baurú.

Arrangements were, the message states, being made with the Paulista, whereby this railway would be able to extend its lines beyond Pompeia, and widen the gauge from 1 m. to 1·60 m. over the part which served Jahú and went through to Baurú. At the same time the Government, defending, as is its duty, the interests of the community, would have to examine very closely the effect which the expansion of another railway in these extensive and fertile localities would have on the Sorocabana, and it would be the duty no less of the Paulista to envisage the matter in the same public-spirited manner as it did when entering into the Noroéste Improvements scheme.

Consideration for the Agriculturist

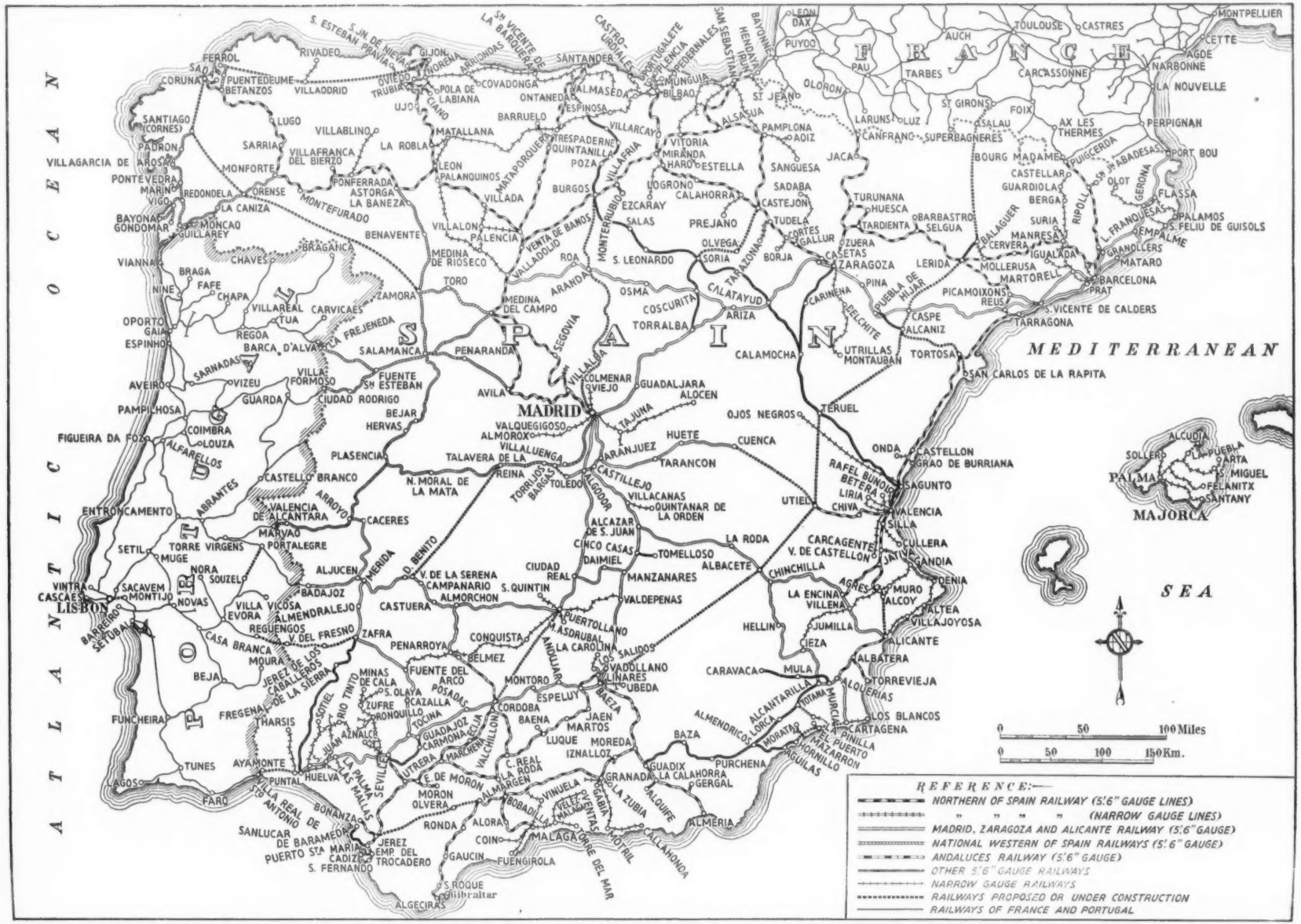
It was indisputable, however, that the Government could not remain deaf to the demands of innumerable agriculturists, who by their own efforts made acres of wilderness productive, in the hope that one day they would be given adequate rail transport; as creators of potential wealth, they are entitled to expect assistance from the State.

Another serious railway problem was the financial situation of the Mogyana, which, in consequence of the fall in exchange, had been obliged to earmark nearly all its net receipts for the payment of foreign loans, and was also suffering severely from road competition; the length and capital value of this railway, and the part it played in the development of the prosperity of the State by virtue of the areas served, were such that the Government could not remain indifferent to its welfare.

From the foregoing, the Governor concluded, it would be possible to realise the nature of the task which the Government intended to tackle, with a view to co-ordinating the State railway systems.

Rêde de Mineira Viãçáo

A length of 80 km. of the new line from Patrocinio, on the Rêde Mineira, to Ouvidor, on the E.F. Goyaz, are ready for traffic, and it is expected that the work will be completed in two or three months' time, and the line officially inaugurated by the Governor of Minas Geraes, Señor Valladares.



Map of the Spanish railways as they were before the nationalisation of the Andaluces and other railways and subsequent developments due to the civil war

SPANISH RAILWAYS AND WORKERS' CONTROL

Notes upon the principal features of the Decree dated August 3, which provided for the taking over of the principal systems by a part-State part-workers' committee and for the suspension of debenture interest

THE full text is now available of the Decree of August 3, which provides for taking over the principal Spanish railways, and the very radical nature of this measure warrants a detailed examination of the main points in the Decree. It begins with a preamble intended to justify the measure, which runs as follows: "In consequence of the present circumstances, the working of the principal railway companies has suffered an evident transformation, in which coincide circumstances of divers orders, the principal being the lack of direction of the companies and of attendance by the boards of directors." It goes on to say that the workers, with exemplary patriotism, have taken charge of the working, the impression being thus conveyed that the employees patriotically stepped in to fill the gap produced by the absence or neglect of the companies. It is however extremely doubtful if in all fairness the companies will accept this implication in silence, or even admit the chronological sequence preferred.

Turning from the preamble to the body of the Decree, it appears from Article 1 that the State takes charge of the railways provisionally, but it does not say for the duration of the exceptional circumstances, or indeed for any period. The lines affected are those of the Northern of Spain, Madrid, Zaragoza & Alicante, Central Aragon, and the part of the Western not already belonging to the State, the whole to form one system with the Andaluces Railways already taken over in May last. The mileage involved is as follows:—

Northern of Spain	2,295	miles.
Madrid, Zaragoza and Alicante (M.Z.A.)	2,276	,,
Central Aragon	220	,,
Western	882	,,
Andaluces	1,195	,,
	6,868	,,
State Railways	100	,,
	6,968	,,

With the exception of about 100 miles, mainly belonging to the State, the mileage is all 5 ft. 6 in. gauge, and it represents some 75 per cent. of the whole railway system of Spain. Article 2 says that the State will take over the plant and equipment, stores, and other property of the companies, including cash and funds held not only in the companies' own keeping but in banking accounts and in the hands of creditors, as well as the reserves pertaining to the exploitation. All this property is to be taken over on inventory, in the compilation of which the respective companies are to have due representation.

Suspension of Debenture Interest

Article 3 contains one of the most startling features of the Decree, since its effect is to suspend the payment of the debenture interest. The article begins by providing for the continuance of separate accounts for the different systems, but goes on to say that the whole of the working receipts are to be devoted in the first place to the payment of the full wages of the staff, no amount whatever being available for disposal until the whole of the salaries and wages have been paid in full. After the payment of the full wages, the other remaining working expenses may be met, *but the payment of the financial charges is to remain in suspense.* The priority conceded to wages is no new thing, but to suspend by a stroke of the pen the payment of the financial charges is to impose a moratorium by decree, overriding the Commercial Code and the Mortgages Law. Among the interests affected by this suspension is the Railway Employees' Association, whose relief and pension funds are invested largely in debentures of the principal companies. The National Railwaymen's Syndicate has always been in favour of nationalising the association and possibly this will now become inevitable, but this will not help the other unfortunate debenture holders. The last Article, No. 4, sets up a working committee, composed of 12 members, half of whom are to be civil servants representing the State, and the other half railway employees elected by the syndicates or trade unions. Of the State representatives three are nominated by the Minister of Public Works, two by the Ministry of Finance, and one by the Ministry of Industry and Commerce. The committee elects its own President from among the Public Works representatives, but there is no mention of a casting vote. The committee is to have all the functions of the boards of directors as well as those of the general managers and assistant managers, all of whom remain "in suspense." Heads of departments assist at the meetings of the committee to advise and to receive direct instructions. It would seem that the effect of this will be to centralise the control, but the position of the heads of departments will evidently not be an easy one.

Financial Conditions

The railway problem in Spain, which has been an ever-increasing preoccupation for successive governments since the war doubled wages and fuel prices, has hinged mainly on the difficulty of meeting fixed charges. This was made very clear in a book on "The Railways of Spain," published by THE RAILWAY GAZETTE as long ago as 1923, and the difficulty has been accentuated of late by decreasing receipts and the intensive competition of the roads. The amounts involved are large, the debenture capital of the Northern and Madrid, Zaragoza & Alicante alone reaching a total of over 2,000 millions of pesetas, or say £55 millions sterling at an exchange rate of 36 pesetas to the £. Even before the revolt the quotations for the securities of both companies had fallen to very low figures, as the following comparisons show:—

	Northern		M.Z.A.	
	Shares	Debentures	Shares	Debentures
December, 1930	526	71	494	327
December, 1935	192	53	165	242
May 22, 1936	70	30	61	129

Both companies failed to cover the whole of the debenture sinking fund in 1935. This is easily explained by the marked decrease in earnings, unaccompanied by any saving in working costs, as is shown by the following figures representing millions of pesetas:—

	Gross Earnings		Working Expenses		Net Earnings	
	Northern	M.Z.A.	Northern	M.Z.A.	Northern	M.Z.A.
1929	372·3	328·3	272·6	224·3	99·7	103·9
1935	332·2	266·3	272·2	228·4	60·6	37·8

As the service of the debentures requires about eighty millions of pesetas annually in each case, it is easy to see how acute the problem had become. Now if by the simple publication of a decree in the Madrid *Gazette*, the

payment of all first charges can be suspended *sine die*, and if fresh capital can be found by the State, the problem may possibly be solved in a manner satisfactory to the Government, and one that has always been advocated by the labour unions. As recently as May 25 last, the National Syndicate of Railwaymen, affiliated to the now famous "U.G.T.," gave the following categorical expression to the aspirations of the party, in the organ of the Syndicate, *Union Ferroviaria*:—"The railway system must be taken over, and at once, taking the working out of the hands of the companies, and without any undue regard for the injury which may be produced to private interests." The same article goes on to refer to the necessary form of railway management, not as a State Department but by an "autonomous organism," free of political influence, and with a preponderating proportion of workers. Here, in a word, is the key to the activities of the Syndicate—"workers' control"—and there has never been any attempt to conceal the intentions of the men's leaders in this respect. They were disappointed when they failed to get it included in the electoral pact that formed the basis of the "Popular Front" at the general election in February, but it was by no means abandoned, and on the first day of the revolt—under the more or less transparent shelter of a "general strike"—the railway workers took over the main lines and "dismissed" the boards and managers. Now they have induced the Government to legalise the position and suspend the payment of first charges, and the next move will be to raise rates of pay all round. Incidentally, now that the Andaluces and other more or less insolvent railways are to be regrouped, the losses on these lines may be balanced by the surpluses on other more remunerative systems, although it is by no means certain how the Decree will become effective in the provinces not directly under the rule of the Madrid Government. Should the Madrid Government regain control, the problem of the Spanish railways seems likely to be solved at the expense of the share and debenture holders.

AUTOMATIC INTERLOCKING ON THE ETAT

Installation at Pont Cardinet terminus

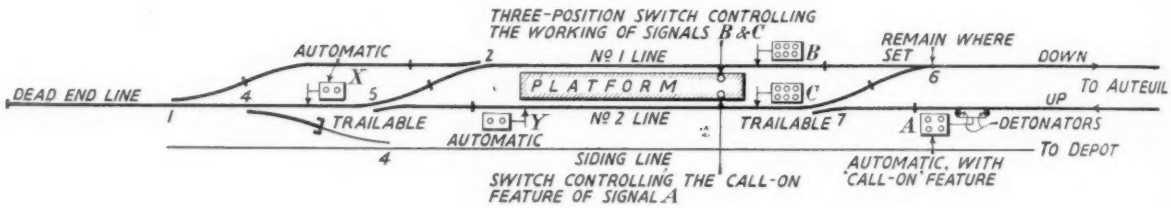


Diagram of automatic terminal working, Pont Cardinet

OVER two years ago the French State Railways installed automatic interlocking at Puteaux station, on the Moulineaux line, which was described in our issue of May 18, 1934. Its successful working has led to another installation at the Pont Cardinet terminus, on the Auteuil-Boulogne line, as shown on the accompanying diagram reproduced from the *Revue Générale des Chemins de fer*. There is a certain general resemblance between this layout and that found at the Liverpool terminus of the Mersey Railway, but the use of spring points makes the actual working somewhat different, the controls being less complete.

An up train arriving on No. 2 line can, after completing station duties, return to the down line by crossover points 7 and 6 as soon as the first automatic block section is clear, or it can proceed to the dead end line and reverse there, leaving the up side of the platform clear for another train, passing to the down side by the other crossover. This was the normal arrangement when the installation was first put into service, crossover 6-7 being added since.

A three-position switch on the platform enables the signals *B* and *C* to be controlled, either together or singly, as stop-and-stay signals; in the latter event, the other works as a stop-and-proceed block signal. A second switch gives a call-on indication by the up home signal *A*, which, although working automatically, must necessarily show an absolute stop indication, and be passed at danger only with the authority of the person in charge of the station. It is fitted with a detonator placer, maintaining two detonators on the rail when the "stop" indication is showing. It is no longer necessary for a signalman to be on duty while the regular routine train movements take place. A similar system of working is to be installed at Auteuil station.

Locomotive Pistons

Considerable attention is at the present time being paid in Canada and America to the design of locomotive pistons. In 1934 a report was issued on the subject, and since then many railways have adopted lightweight pistons in which the packing rings perform the function of a bull ring and carry the weight of the piston. The Canadian National Railways now have 602 locomotives equipped with the design of piston shown in the 1934 report; no changes have been made in the design, but the application of lightweight pistons has been extended. Certain railways have abandoned the bull ring type and have adopted in its place a one piece nickel steel piston. In others the pistons are of the conical type, but the spider and bull ring have been combined in an integral casting of gun iron. The packing rings are of a special sectional design, the segments being forced outward in contact with the cylinder walls by hoop-like flat steel springs. The pistons in the streamlined 4-6-4 locomotive *Commodore Vanderbilt* of the New York Central are of interest because of the extremely light design made possible by the use of high-tensile steel. The locomotive had run 43,200 miles with these pistons by March 1, 1936, and the service rendered by them is said to have been most satisfactory. Lightweight piston valves are also being developed to save weight in the reciprocating parts.

RAILWAYS AND ROAD TRANSPORT SECTION

This section appears at four-weekly intervals

Railway Interests in Road Transport

IN our issue of March 13 last we included various tables compiled from the annual reports of the four group railways, showing the amounts invested in various road undertakings. That information can now be supplemented by some figures from the volume of statistics published recently by the Ministry of Transport. From these tables we have compiled the table at the foot of this page, showing the amounts of floating capital invested by the various companies. This floating capital is distinct from the L.N.E.R., L.M.S.R., and G.W.R. shareholdings given in our tables of March 13. The investments of the Southern Railway in passenger road concerns are not charged to capital account and so figure in the table below. From this it will be noticed that the four grouped railways have each advanced £200,000 to Carter Paterson & Co. Ltd. and £17,500 to Hay's Wharf Cartage Co. Ltd., although in the case of the Southern Railway £7,500 is debited to Pickfords Limited (of course, a Hay's Wharf subsidiary). Similarly, the G.W.R. advance of £115,000 to the Western National Omnibus Co. Ltd. is in addition to the shareholding and the same applies to the L.M.S.R. loan of £8,000 to Joseph Nall & Co. Ltd. In all these cases the earnings represent the interest received. In addition to the amounts received from investments in various companies, the L.N.E.R. shows a net receipt of £11,207 from its joint working of certain Corporation passenger services in Yorkshire, and the L.M.S.R. also has a net receipt of £37,713 from similar arrangements for joint working with local authorities of Sheffield, Huddersfield, and so on. Incidentally, this latest return reveals that the amount of £16,425 given under "Road transport, maintenance of motors" in the L.N.E.R. annual report is made up of £10,507 for passenger vehicles and £5,918 for goods vehicles. Similarly, the figure of £76,085 in the L.M.S.R. report comprises £43,103 for passenger vehicles and £32,982 for goods vehicles. The return indicates that the railway net revenues from road transport including net receipts of their own goods services, dividends from investments, interest on loans, and, after deducting 4 per cent. interest on the floating capital, came to the following totals: L.N.E.R. £259,005; L.M.S.R. £340,560; G.W.R. £185,949; S.R. £67,439.

Co-ordination in New Zealand

THE whole of the road services formerly operating in competition with, or in extension of, the railways on routes south of Timaru (*i.e.* over almost the whole of the southern portion of the South Island) have now been acquired by the Government Railways and will be worked by this organisation. The Hon. D. G. Sullivan, Minister of Railways, in announcing the decision said: "The purchase of these services makes a further valuable co-ordination of road services under single ownership. From the public aspect it is satisfactory to know that, while the price paid in each instance has reasonably recompensed the vendors, the department's estimates show, after full allowance has been made to cover cost and depreciation, that the services can be run to supply the best modern standards of comfort and convenience, and at the same time will provide a reasonable return on the investment. The price paid in each instance has been decided by mutual agreement between the vendors and the Railways Department, after very thorough investigation by the General Manager, Mr. G. H. Mackley, and his responsible officers."

The Government's opinion regarding the area of the southern lakes and fiords is that in view of the amount of Government money spent and still to be spent, estimated to total £350,000, to open up the great scenic area and National Park between Te Anau and Milford Sound, the purchase of the road services for operation in conjunction with the railway and railway-owned road services converging on Lumsden is most important, for it gives the Government an opportunity to gain some direct financial benefit, through its own transport and accommodation facilities, from the cost incurred in this great national work.

Two road services recently purchased complete the co-ordination under single ownership of the whole of the licensed passenger-carrying business between Christchurch and Akaroa, by road and rail. The elimination of competition on the Christchurch-Little River-Akaroa route will

Associated Company	L.N.E.R.		L.M.S.R.		G.W.R.		S.R.	
	Investment	Earnings	Investment	Earnings	Investment	Earnings	Investment	Earnings
	£	£	£	£	£	£	£	£
Aldershot & District Traction Co. Ltd.	—	—	—	—	—	—	63,647	5,273
Carter Paterson & Co. Ltd.	200,000	3,168	200,000	3,151	200,000	3,166	200,000	3,166
Devon General Omnibus & Touring Co. Ltd.	—	—	—	—	—	—	42,235	3,410
East Kent Road Car Co. Ltd.	—	—	—	—	—	—	230,610	9,223
Hants & Dorset Motor Services Limited	—	—	—	—	—	—	164,584	15,479
Hay's Wharf Cartage Co. Ltd.	17,500	168	17,500	168	17,500	168	10,000	138
Maidstone & District Motor Services Limited	—	—	—	—	—	—	267,966	17,425
Joseph Nall & Co. Ltd.	—	—	8,000	400	—	—	—	—
Pickfords Limited	—	—	—	—	—	—	7,500	30
Southdown Motor Services Limited	—	—	—	—	—	—	284,565	21,732
Southern National Omnibus Co. Ltd.	—	—	—	—	—	—	271,100	11,744
Southern Vectis Omnibus Co. Ltd.	—	—	—	—	—	—	42,500	2,550
Thames Valley Traction Co. Ltd.	—	—	—	—	—	—	33,188	1,643
Western National Omnibus Co. Ltd.	—	—	—	—	115,000	955	—	—
Wilts & Dorset Motor Services Limited	—	—	—	—	—	—	17,571	2,387

undoubtedly be in the public interest, because a more convenient service will be provided, to the advantage of local residents, and a financial benefit will accrue to the general taxpayer, as all the services taken over will be profitable in themselves and enable a reduction to be made in railway operating costs. The Government states that the complete service will be maintained at a standard consistent with the most modern requirements of passenger transport for business and holiday travel. The negotiations for purchase of all road services have been carried through amicably and with satisfaction to all concerned.

South Lancashire Co-ordination

FOR some years past various schemes have been promoted for the co-ordination of passenger road transport in the thickly-populated area around Manchester, but so far without success. Broadly, the position is that the bulk of local passenger road traffic is handled by the undertakings of the various municipalities, while longer-distance traffic is dealt with by large bus companies (chiefly railway-associated) such as the Ribble Motor Services Limited and the North Western Road Car Co. Ltd. Two or three years ago negotiations were started for creating a joint municipal transport board in that area, but these were suspended recently, as eight of the eleven authorities originally interested had withdrawn. The difficulty was in arriving at a financial basis for the merger, and not any lack of desire to co-ordinate services, for already extensive joint working of through services has existed for some years.

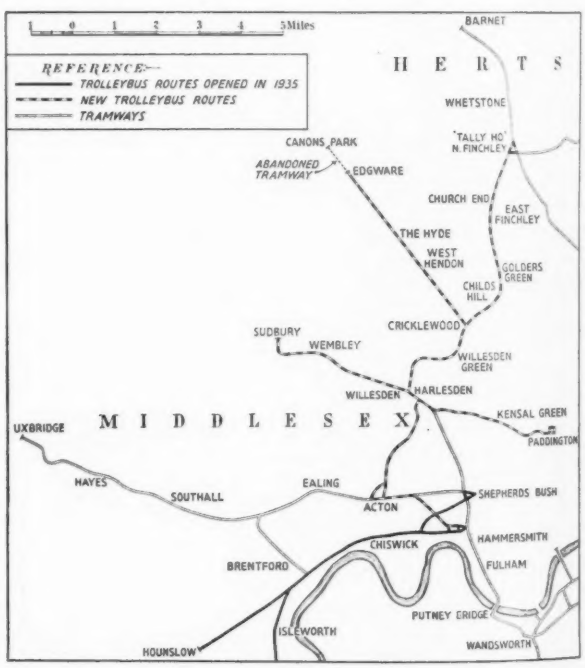
A new stage in the negotiations began recently on the proposal of Mr. Ashton Davies, Chief Commercial Manager, L.M.S.R., who suggested to the Manchester Corporation that the different authorities should co-operate with the company's associated motorbus undertakings. At a conference of transport authorities held in Manchester, it was agreed that the Town Clerk of Manchester should communicate with all the corporations in South Lancashire that had passenger transport departments, asking whether they were willing to join in a transport arrangement in which the L.M.S.R. and large bus companies could participate. The possibility of a municipal transport board is still under consideration, and the whole matter is to be reopened at the resumed conference, the date of which is not yet settled. Several of the authorities have already agreed to send representatives, and the discussion is likely to be on the basis of a board for South-East Lancashire similar to the London Passenger Transport Board. It is probable, however, that the railway suggestions will be known in more detail before that time, as, at a conference of local authorities to be held in Manchester next month, the L.M.S.R. and L.N.E.R. will state their terms for the electrification of railway lines in South-East Lancashire, and doubtless the future position of road transport in the area will be an important factor.

American Road Competition

IF aerial competition in the United States is sufficient to explain the necessity which has been behind the radical acceleration of long-distance train services in that country, a study of modern American motor coach methods equally accounts for the recent substantial reductions in railway fares. For the road journey of 223 miles from New York to Boston a fare equivalent to 12s. is charged; to Chicago, 842 miles, it is approximately 52s., to Miami, 1,405 miles, 72s., and to Los Angeles, 3,094 miles, 152s.; that is to say the fares range from ¾d. to ¾d. a mile. What is more, journey times by coach have been brought down until Boston is reached in 7 hr., Chicago in 27 hr., Miami in 41 hr., and Los Angeles in 94 hr., entailing overall speeds, inclusive of all stops, of 31 to nearly 35 m.p.h. It has taken but little over a year or so for the New York-Los Angeles road journey to come down from a full week to under four days, and at slightly increased fares places may be secured in 24-berth sleeper coaches in place of the more usual 33-seater vehicles. It is estimated that some 24,000 buses and coaches are engaged in inter-city traffic in the United States, and that this year they will carry 750 million passengers, cover more than a thousand million miles, and earn a gross revenue of £50,000,000. Out of New York the motor coach departures average almost one a minute throughout the day.

More London Trolleybus Routes

RAPID progress is being made by the London Passenger Transport Board in the equipment of outer London routes for trolleybus working. At the end of last year all the Thames valley tramway lines of the old London United Tramways had been abandoned, and trolleybuses substituted, and the last few weeks have seen a similar development in north-west London. Hammersmith-Acton changed over on April 5 and prepared the way for converting a group of routes of the old Metropolitan Electric Tramways. These have been opened as follow: Acton to Edgware on July 5; Cricklewood to North Finchley on August 2; and Paddington to Sudbury on August 23. The opening of trolleybus working to Edgware resulted in the abandonment of a short length of tramway thence to Canons Park, where electric traction has given way to internal-combustion-engined buses; the latter have for many years given through service to Watford, an early and unfulfilled intention of the tramway promoters.



Sketch map showing the recently-opened trolleybus routes in north-west London

Carting a Modern Locomotive

IN last week's issue we included a picture of the 4-6-2 express locomotive of the German State Railway in the Deutschland exhibition in Berlin. The two photographs reproduced below show how the locomotive and its tender were taken to the exhibition by the aid of the multi-wheel carriers designed by the railway engineers for transporting heavy loads on ordinary roads. Without its tender this engine weighed 90 tons. At the Heerstrasse station it was lifted by four powerful jacks mounted on concrete blocks to enable two of the 24-wheel carriers to be placed beneath. It was then lowered on to them and towed to the exhibition through the Olympic festival road and the Adolf-Hitler-Platz, a most imposing sight. The locomotive was built by the Schwartzkopff concern.

Two views of the German express locomotive and its tender being taken to the Deutschland exhibition

Electric Railway Yard Vehicles

A scheme developed by the London Midland & Scottish Railway for using battery electric vehicles as a moving platform for sorting goods for delivery

IN the course of the past few months descriptions have been given in these pages of various methods of handling miscellaneous parcels and goods at receiving stations. It is a problem that is being tackled by a number of methods and, owing to the way in which the conditions differ, it is unlikely that a scheme can be evolved which will suit even the great majority of places. One idea that is proving successful at several stations on the London Midland & Scottish system uses the services of Morrison electric vehicles which take the place of the old-style unloading bank.

In the goods sheds where the new system has been introduced, the railway trucks stand at one side of the shed, the old loading and distributing banks have been taken away, and the area paved at ground level in a way suitable for heavy vehicles. Along the line where under the old scheme the vehicles were backed up to the deck, a butting strip built up of heavy joists of timber, 1 ft. wide, is erected to a height of about 4 in. above the level of the platform of the average delivery vehicle. Against this the road vehicles are backed to receive their loads. Between the butting strip and the railway trucks there is a clear space in which the Morrison electric vehicles work. They are sturdily built, the design having been evolved by the L.M.S.R. Electrical Engineer, working in conjunction with A. E. Morrison & Sons Ltd., of Leicester. The floor of the vehicle comes about 2 in. above the top of the butting strip and the same distance below the floor of the railway wagon.

The electric vehicles are placed in position alongside the wagon, and a drop plate fitted to the electric vehicles enables the goods to be transferred easily and rapidly. Only one tier of goods is thus placed, and when the platform is filled the vehicle is driven across the open space to one end of the butting strip, along which it proceeds, making stops at each road vehicle for which it has a consignment. As each yard vehicle is cleared across the butting strip it returns to the railway wagons for a further load.

A great deal depends upon the ability of the yard vehicles to stand up to what can fairly be described as rough treatment. They are handled by unskilled drivers, but the controls are so simple that it has been found that only the briefest training is necessary. There is a steering wheel, a lever that controls the direction, and a pedal which first releases the brake and then operates the controller against the action of a spring. From the illustration it will be seen that the controls are housed in a cupboard at the front of the vehicle, behind which the driver stands; he has a shield behind him, against which he can rest, and which prevents any goods touching his feet and thus interfering with the control.

The platform is built up of elm planks, 2 in. thick, running the full length, and at each end there is a buffer beam with strong springs behind them to take any shock. The dimensions of the platform are 16 ft. 6 in. long by 6 ft. 6 in. wide, but the sides are not dead straight; they are given a slight curve so that there will not be excessive wear on the butting strip. The edges of the platform are further protected by a metal nosing with metal strips to assist it in passing over any obstruction. In the construction of the chassis care has been taken to avoid any projections which might cause trouble when in close proximity to rail vehicles or in positioning at the butting strip.

The Morrison electric vehicle for use in railway yards. Note the spring-loaded buffer-beam in front (there is a similar one at the back) and the metal nosing along the sides of the platform

The batteries from which the vehicles are operated are of sufficient capacity to cover a day's work up to about 10 hours. They are charged on the vehicle. Where alternating current is available, each battery is charged by an individual Westinghouse metallic rectifier arranged to taper down the charge automatically and finally cut it off. Where direct current has to be used a charger supplied by the Morrison firm is utilised. This permits from the maximum number of vehicles down to one vehicle to be charged. As each battery becomes fully charged it is tripped out of circuit and a resistance cuts in.

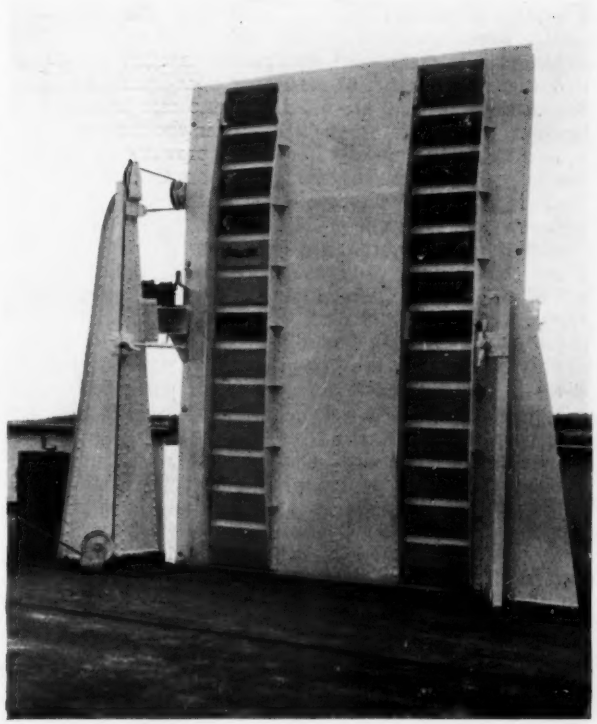
To facilitate manœuvring in confined spaces, the vehicles have a wheelbase of 6 ft., while the large lock enables them to turn in a 13-ft. radius. The stations at which the system has been introduced are Bedford, Luton, Keighley, Barrow, Burton, and Blackpool.

A Motorcar Ferry

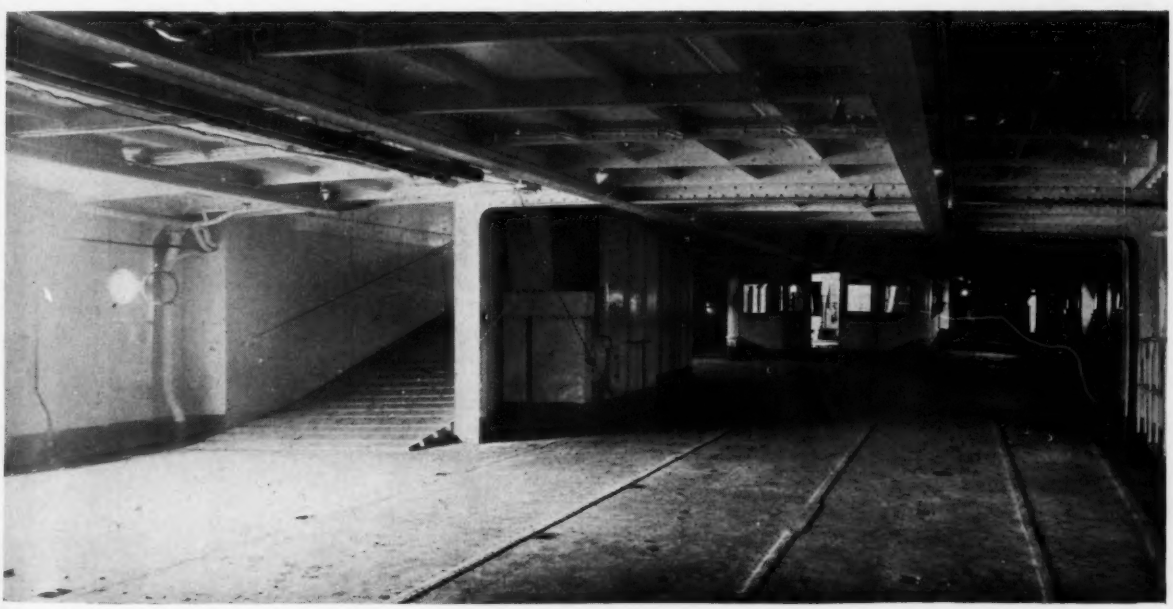
A reconstruction of a well-known packet boat to make it suitable for carrying motorcars between Dover and Ostend

ANTICIPATING the time when the London-Istanbul highway will become an accomplished fact, the Belgian National Railways have given that name to one of their vessels—the *Ville de Liége*—which they have had reconstructed in order to make it suitable for conveying motorcars between Dover and Ostend. The general appearance of the vessel has been considerably altered, as it now has a single funnel in place of the two original ones, and the masts are vertical instead of being raked. The removal of two large water-tube boilers and the conversion of the others from coal to oil fuel enabled more space to be available for garages.

On the *London-Istanbul* four garages are arranged, the first of which is at the after end of B, or top, deck. On C deck, garages Nos. 2 and 3 occupy practically the whole deck and are separated from each other by a fireproof screen mounted on rollers. The fourth garage is situated on D deck and stretches from the steering gear room to amidships, where two solid anti-fire roll shutters covered with Eternit have been placed for the protection of the installations on the forward part of the ship. At the rear of this garage there is a side opening to starboard 9 ft. by 8 ft., equipped with a loading gangway, which is operated by a special electric winch situated on C deck. The loading gangway is a ramp 13 ft. high. Its maximum slope in each direction is 25°, so that it may compensate for a difference in tide of about 6 ft. The ramp is composed of two plates forming a carriageway of about 2 ft. wide and calculated to take a weight of 10 tons an axle, in order to allow 20-ton lorries to be taken on board. As the plates forming the ramp are not rigid, it is thus possible to compensate for the slight difference of slope due to the fact that the ship is not absolutely horizontal to the quay.



One of the runways for loading and unloading



Garage No. 4, the aft portion of D deck on the Dover-Ostend motorcar ferry "London-Istanbul"

So as to use the greatest possible width for manœuvring motorcars on board, all the car loading gangways are placed on the starboard side of the ship, while on the port side are arranged the ramps communicating with the various decks. From the ramps to the loading gangways the radius for turning is about 30 ft., so that a car of normal size can enter and round the ramp without special manœuvre.

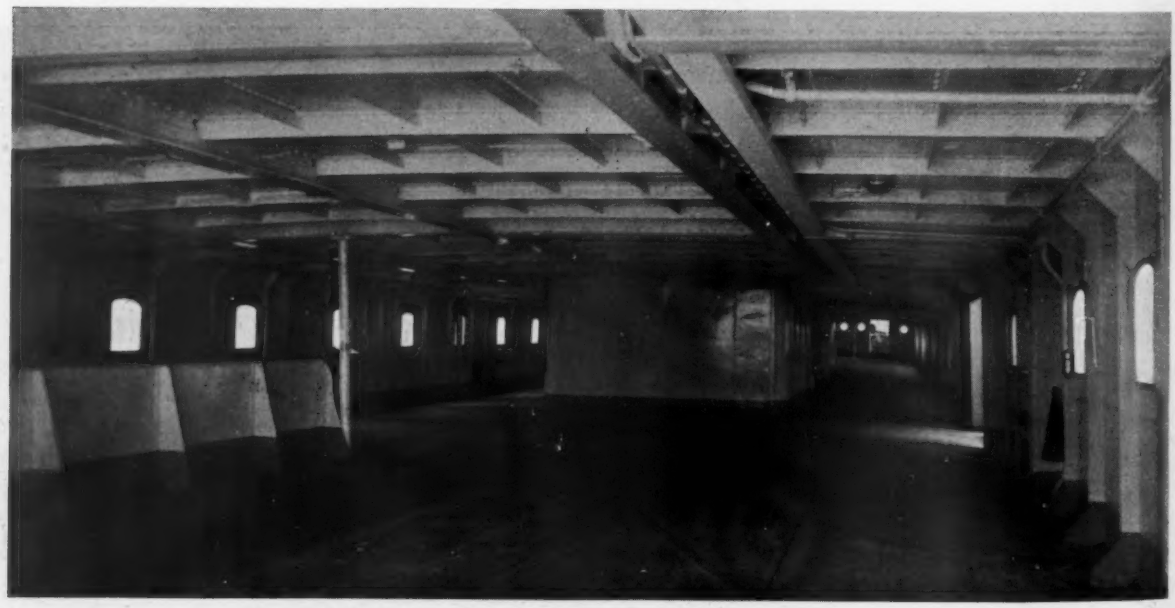
In order to hold the cars in position in rough weather, a system of deck rings with transverse bars has been used. These bars are let into the deck in the form of rectangular pockets, and are placed in such a manner that there are always at least four near each car; in all 380 of these pockets are fitted, and the cars are attached to them by manilla ropes placed over the bumpers.

Two loading gangways have been provided in view of the large dimensions of the garage on C deck; one of these is placed in the fore part of the ship at such a distance from the front roll shutter that easy access to the garage is possible through a large door on the port side. The second loading gangway on this deck has been placed aft of the engine casing and gives direct access to the ramps leading from C deck to D deck.

No effort has been spared to limit and to combat the danger of fire. In the first place the garages have been divided into four non-inflammable car parks isolated to the greatest extent by judiciously placed roll shutters. The scuppers for clearing water from the garages have been constructed in such a manner as to prevent the extension of fire. They are let into receptacles filled with brick powder which would extinguish any burning petrol running through. This precaution, adopted for the first time on board a ship, will prevent the transmission of fire to a film of petrol which might surround the boat. In the event of fire, bomb extinguishers fitted in the garages explode automatically as the result of the heat, thus constituting an alarm signal as well as a rapid means of extinction. Electric detectors in the roofs of the various sections should also give indication of the location of any fire. A complete system of foam extinguishing is installed, sufficient to produce 10,560 gall. of foam.

The ramp leading from C deck to B deck where garage No. 1 is situated

The propelling machinery consists of one h.p. and two l.p. turbines, each driving separate screws. The machinery at full power develops 8,500 h.p., giving the vessel a speed of 21 knots. Accommodation is arranged for 200 passengers in two classes, the second class being reserved for chauffeurs, with 26 berths.



Looking forward from No. 3 garage on C deck to garage No. 2. Practically the whole of the space on this deck is available for parking cars

The Scammell Mechanical Horse

Its adaptability to the drawing of trailers of various designs to deal with special as well as normal traffics and other advantages arising from the exceptional manœuvreability of the units

THE sight of mechanical horses at work is now a familiar one in large towns and cities, abroad as well as at home, and it is often overlooked that one of the great merits of the system is that the motive units can be kept usefully employed for the maximum working time. In other words it is the complete interchangeability of the tractor and trailer units that is such a valuable asset as the part that costs the most does not have to stand idle while the carrier is waiting to be loaded or unloaded. Something of that side of their employment entailing complete interchangeability and the advantage of being able to couple up with widely varying types of carrying units can be gathered from the four photographs reproduced on this page and the following one. They also emphasise that all the British group railways make use of the Scammell mechanical horse in a variety of ways, apart from the large number of tilt vans and flat lorries which are worked by this method. Not that these exhaust the possibilities, for there are many other special types of trailers that have been evolved for use with the mechanical horse, such as the lightweight frameless tankers for transporting liquids and the long carriers for timber.

The fact that one mechanical horse unit can be employed with several trailers is rendered possible by the ingenious turntable and automatic coupling device fitted to the trailers. This also incorporates the retractable two-wheeled under-carriage that drops into position to support the fore-part of the carrier when the tractor is withdrawn. Not only is the coupling and uncoupling, and the connecting of the brake gear, carried out automatically but it may be effected with the two units at an angle or on uneven ground. That is one of the attributes that has proved particularly useful in railway service where the area in which the vehicles have to operate is often restricted. It is due to this articulation that the motive unit and its carrier can be completely turned in something less than its own length, and because the connection between the two is definite and the control is certain, the mobility is much in advance of that which can be secured with ordinary horses. That the steering is effected by the single front wheel, which is provided with a castor action,

also plays an important part in the amazing manœuvreability, as it enables the motive unit to turn at a right angle in either direction.

In railway service in Great Britain alone there are more than 1,900 Scammell motive units in operation, as well as more than 3,000 Scammell trailers, while there are many others of various makes fitted with the Scammell coupling gear. The total is continually being added to, one of the latest orders, recorded in Contracts and Tenders in last week's issue, being that from the L.N.E.R. for 24 3-ton Scammell tractors, six 6-ton Scammell tractors, as well as 130 sets of coupling gear, and trailers of the rigid pole, sliding pole and cranked frame types.

The advantages of the shuttle system of working the tractors with a number of trailers or carrier units is likewise being greatly appreciated in overseas countries and they are now to be seen at work in Australia, New Zealand, South Africa, Persia, Malta, and Argentina.

Containers in the U.S.A.

AS recorded in THE RAILWAY GAZETTE of July 10 last, the office of Federal Co-ordinator of Transport in the U.S.A. lapsed on June 10, but on the day before that there was issued from the department a most extraordinary volume in the shape of a report on the development and use of containers in the United States and other parts of the world. Its pages measure 16¾ in. by 10½ in. and there are over 300 of them, each containing what would ordinarily be two pages of typewriting, for the whole of the text and tables is reproduced in typewritten characters. It is true to say that this is a mine of information on the use of containers under widely varying conditions and for a multiplicity of traffics. A large number of illustrations helps to show what has been done towards solving the problem in different countries, and the tables of rates charged and revenue earned are instructive. It is to be hoped that so useful a book will eventually appear in a form which will enable its contents to be consulted more easily.

One result of this comprehensive study of the subject was that Mr. Eastman, who filled the office of Co-ordinator, made some suggestions for a container and a motor lorry specially suited for transporting the containers on the highway. The development is seen in the accompanying illustration, which shows one of the containers being lowered to ground level. The containers are built of steel and special plywood, with large double doors at the ends. They are equipped with air-operated wheels on which they are elevated while being transferred between railway trucks and road vehicles, and these wheels are made retractable so as not to be in the way during shipping. So far three sizes of containers have been built. The smallest is of 304 cu. ft. capacity, has an empty weight of 1,760 lb., and a load capacity of 10,000 lb. The intermediate size has a capacity of 493 cu. ft., weighs, empty, 2,280 lb., and has a load capacity of 15,000 lb., while the largest has a capacity of 823 cu. ft. with an empty weight of 2,900 lb. and a loaded capacity of 20,000 lb. They are of weather-tight construction and dust-proof, and five of them can be loaded on a railway truck. The first examples have been submitted to strenuous tests in Chicago, St. Louis, Fort Wayne and Philadelphia to demonstrate their usefulness in effecting quick and easy transfer from factories or grain warehouses to trains and for loading from the ground in fields and orchards. The containers are being built by the Mount Vernon Car Manufacturing Company, in conjunction with the Haskelite Company. While in transit on the railway they are anchored to the truck by coiled spring shock-absorbing devices.

The special motor vehicle has been produced by the International Harvester Company. It has a movable flat deck, which can be elevated and tilted by the motor drive, and a capstan to assist in raising the container from street level, or for lowering it, and also for moving the container sideways.

One of the containers designed in the U.S.A. as a result of an intensive study of the problem. Note also the special lorry with its ramps and capstan

RAILWAY NEWS SECTION

PERSONAL

Mr. Francis E. Oakes, A.M.Inst.C.E., M.I.Loco.E., Chief Mechanical Engineer, Sudan Railways, has retired on pension after 24 years' service with the Sudan Government. He was educated at Clifton College and gained his early training as a pupil under the late Mr. Wilson Worsdell on the former North Eastern Railway (1906-9).

Elliott] [& Fry

Mr. F. E. Oakes,

Chief Mechanical Engineer, Sudan Railways, 1932–36

In the latter year he was appointed as an Inspector in the Testing Department and later as Senior Inspector on the dynamometer car, and in the Running Department of that railway. In 1912 Mr. Oakes was appointed District Locomotive Superintendent on the Sudan Government Railways (now Sudan Railways), and from 1918 to 1923 was Carriage & Wagon Manager. For the succeeding three years he was Locomotive Works Manager, and was appointed Assistant Chief Mechanical Engineer in 1926. It was in 1932 that he was promoted to be Chief Mechanical Engineer, the position from which he retired on August 11. Mr. Oakes had the Insignia of the Third Class of the Order of the Nile conferred upon him by the King of Egypt in March last, and he is an Associate Member of the Institution of Civil Engineers and a Member of the Institution of Locomotive Engineers.

We regret to record the death of Sir Ramon de la Sota, K.B.E., on August 17 at his residence at Bilbao, Spain, aged 80. Senor de la Sota, besides being one of the greatest mine and ship owners in Spain, was a Director of the Northern of Spain and other railways for many years.

Mr. J. S. Wilson, who, as recorded in THE RAILWAY GAZETTE of August 21, has retired from the position of Assistant Audit Accountant, Southern Railway, entered the service of the South Eastern Railway in 1886, in the Audit Accountant's office. After experience in various sections, he was, in 1908, made chief of the Agreements and Special Department of the South Eastern & Chatham Railway Audit office. In 1910 he took charge of the coaching, rates and fares, and excursion section, becoming Chief Clerk in the department in 1913, and Assistant Audit Accountant in March, 1921. During the war Mr. Wilson served in France as railway accountant to the British Army, with the rank of Major, and subsequently that of Lieut.-Colonel. In 1919 he returned to England and was for a time attached to the War Office, before going back to the South Eastern and Chatham Railway in May, 1920, and was appointed Assistant Audit Accountant ten months later.

Mr. J. S. Wilson,

Assistant Audit Accountant, Southern Railway, 1921–36

Mr. E. Golightly, who, as announced in THE RAILWAY GAZETTE of July 31, has been appointed District Docks Machinery Engineer, Grimsby and Immingham, L.N.E.R., served an apprenticeship in mechanical and electrical engineering with Cowans Sheldon Co. Ltd., Carlisle, joining the former North Eastern Railway in 1914 as Engineer-in-Charge, King George Dock, Hull, at the time of opening this the then most modernly equipped dock at that port; he had charge of the whole of the appliances at that dock. In 1930, Mr. Golightly was appointed Assistant to the Mechanical Engineer, Hull Docks, the position he has held until August 10 last, when he took over his new duties at Grimsby and Immingham docks, L.N.E.R.

Mr. E. Golightly,

Appointed District Docks Machinery Engineer, Grimsby and Immingham, L.N.E.R.

On August 19, Mr. C. H. Nicholson—who, as announced in our issue of July 31, has relinquished his duties as Mechanical Engineer, Grimsby and Immingham Docks to become District Docks Machinery Engineer, Hull—was the recipient, with Mrs. Nicholson, of a presentation from his colleagues at Grimsby and Immingham. This took the form of an electric chiming clock and a morocco leather fitted dressing case for Mrs. Nicholson, and it was made by Mr. P. Liddell, head of the Docks Machinery Department, Darlington on behalf of Mr. Nicholson's colleagues. Mr. H. Cuthbert (Chief Clerk, Mechanical Engineer's Department, Grimsby) presided, and he and Messrs. W. H. Randall (Assistant to the District Docks Machinery Engineer, Grimsby), E. A. Tarrant (District Way & Works Engineer, Grimsby and Immingham Docks), E. Golightly, who succeeds Mr. Nicholson at Grimsby, and others associated themselves with Mr. Liddell, who paid warm tribute

to the recipient, and expressed to Mr. and Mrs. Nicholson good wishes for their future.

Last week we recorded, with regret, the death of Mr. Percy Wheeler, J.P., who for so many years had been a well-known figure in the rolling stock building industry. We are now able to add a few notes to his biography and to publish a recent portrait of him. Mr. Wheeler, who was in his 77th year, had resigned from his managing directorship of the Saltley and Oldbury works of the Metropolitan Amal-

The late Mr. Percy Wheeler,

Director of the Associated Equipment Co. Ltd., and, until 1934, of the Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd.

gamated Railway Carriage & Wagon Co. Ltd., later Metropolitan Carriage, Wagon & Finance Co. Ltd., at the end of 1921, and in 1929 he joined the board of the reconstructed firm, then known as the Metropolitan-Cammell Carriage, Wagon & Finance Co. Ltd. He finally relinquished his directorship when the company was re-formed in 1934, as the Metropolitan-Cammell Carriage & Wagon Co. Ltd., though retaining his connection with it as consultant.

The funeral took place at Marylebone Cemetery on August 17. In addition to the family mourners there were among those present the following:—

Mr. S. H. Barfoot (representing Sir Herbert Walker, General Manager, Southern Railway), Mr. H. T. Bailey, Mr. J. H. Bance and Mr. F. J. Bance (J. H. Bance & Co. Ltd.), Mr. A. W. Bolden (Chairman, Antofagasta (Chili) & Bolivia Railway), Lt.-Col. G. E. Cockburn, Mr. F. J. Hill (London Manager, Metropolitan-Cammell Carriage & Wagon Co. Ltd., also representing the Chairman and directors), Mr. J. Cave and Mr. Stanley Morgan (also of that firm), Mr. William Jowett (Wilford & Co. Ltd.), Col. R. Piggott (formerly of the B.B. & C.I.R.), Mr. A. L. C. Purr (representing Mr. T. L. Taylor, Chairman of Taylor Bros. & Co. Ltd.), Mr. C. W. Reeve (Chairman and representing the Associated Equipment Co. Ltd.), Mr. George Terrell and Mr. C. P. Sandberg (partner in Messrs. Sandberg, Consulting Engineers). Mr. Frank Dudley Docker was also represented.

Mr. Joseph Critchley, M.I.Loco.E., Railway Technical Representative, Vacuum Oil Co. Ltd., has retired on pension after 33 years' service. Born in 1871 in Bury, he was apprenticed to Bentley & Jackson, engineers of that town, his course including drawing office and pattern-making work. In 1888 he joined the former Lancashire & Yorkshire Railway, and served under Sir John Aspinall, who was then Chief Mechanical Engineer. Ten years later he took up an appointment with the Ceylon Government Railway, but resigned from it to join the Vacuum Oil

Mr. J. Critchley,

Railway Technical Representative, Vacuum Oil Company Limited, 1903-36

Co. Ltd. in London in 1903. He became a Member of the Institution of Locomotive Engineers in 1921.

At a meeting of the board of John I. Thornycroft & Co. Ltd., on August 19, Engineer Vice-Admiral Sir Reginald W. Skelton, K.C.B., C.B.E., D.S.O., was appointed a director of the company.

Mr. H. Blin Stoyle, Locomotive Superintendent, Kenya & Uganda Railways, who is at present home on leave and regarding whom a paragraph appeared on page 277 of our August 14 issue, points out that in one respect our paragraph was incorrect; it stated that since May, 1935, Mr. Stoyle had been Acting C.M.E., whereas he was only Acting C.M.E. whilst Mr. K. C. Strahan, C.M.E., was on leave, that is to say, until January, 1936.

INDIAN RAILWAY STAFF CHANGES

Mr. A. K. Muirhead, Controller of Stores, N.W.R., has been granted two months' leave as from August 17.

Mr. J. M. G. Doog has been appointed to officiate as Deputy Chief Engineer, Burma Railways, as from July 16.

Mr. H. N. Parker has been appointed to officiate as Deputy Agent, E.B.R., as from July 3.

The London School of Economics

The syllabus of lectures in railway and cognate subjects to be given at the London School of Economics, London University, during the coming winter has now been issued. The Michaelmas term begins on October 5. Details of the lectures are given below, and the letters "M," "L," and "S" (standing for Michaelmas, Lent, and Summer) in brackets indicate the terms in which they will be given.

Railway Geography, Dr. Dudley Stamp (M.L.).
Law of Carriage, Dr. Kahn Freund (M.L.).
Commercial Railway Economics, W. T. Stephenson, M.A. (M.L.).
General Statistics, E. C. Rhodes, B.A., D.Sc. (M.L.).
General Economics of Transport, G. J. Ponsonby, M.A. (M.).
Business Administration, Prof. A. Plant, B.Sc., B.Com., and P. A. Wilson (M.L.S.).
Accounting (Parts I and II), S. W. Rowland, LL.B., F.C.A. (M.L.S.).
Operating Railway Economics, W. T. Stephenson, M.A. (M.L.).
Economics of Road Transport, G. J. Ponsonby, M.A. (M.L.).
Railway Statistics, G. J. Ponsonby, M.A. (L.).
Railway Accounts, S. W. Rowland, LL.B., F.C.A. (L.).
Statistical Method (Part I), R. G. D. Allen, M.A. (M.L.S.).
Economics of Road Transport, G. J. Ponsonby, M.A. (M.L.).
The Economic Consequences of Recent Transport Legislation, G. J. Ponsonby, M.A. (L.).
Elements of Transport, W. T. Stephenson, M.A. (M.L.).
Economics of Transport, W. T. Stephenson, M.A. (M.L.S.).

Other courses are open for those wishing to take the London degrees of B.Com. and B.Sc. (Econ.).

During the forthcoming university year two series of important public lectures of transport interest are also to be delivered at the school. Sir Lynden Macassey, K.B.E., K.C., is to lecture during the Lent term on "The Co-ordination of Road and Rail Traffic"; "The Principal Public Utility Corporations of Great Britain" will be the subject of a further series in the summer term. The London Passenger Transport Board will be among the organisations reviewed.

A further series of twelve public lectures of a rather more theoretical nature are those being arranged by the Department of Business Administration. Six members of the academic staff will discuss at these lectures matters of administrative organisation, business finance, industrial production, distribution developments, marketing and public relations, and statistical and accounting service. The department also provides a recognised course of training for business management which was established at the London School of Economics a few years ago, on the initiative of a group of business men, for university men who wished to make a career in business. Two Studentships of £200 each are available to those pursuing this course.

Any further information of any of the above-mentioned lectures or academic courses may be obtained on application to the Secretary of the school, Houghton Street, Aldwych, W.C.2.

Right and Left Hand Running

From time to time we receive enquiries from all parts of the world regarding the railway practice in other countries as to the use by trains of either the left or right hand track on double-track railway lines. Our information on this subject is not exhaustive, and the following notes are published with the dual purpose of imparting details which we believe will be of general interest, and giving our readers the opportunity of supplementing the data so that we may eventually collate and publish a comprehensive statement.

As public railways in their origin were virtually a special form of toll road, doubtless the highway " rule of the road " was responsible for the early adoption of left hand running in Great Britain where such practice has been, and is, customary. Apart from Great Britain and Ireland, road traffic in most countries now keeps to the right, but right or left hand running on the railways in many cases fails to correspond with the street traffic rules of the country. This may be accounted for by the pioneer railway-building activities of British engineers a century ago, and certain European countries, such as France, Belgium, and Italy, copied George Stephenson's practice on the Liverpool & Manchester Railway in adopting left hand running.

At the present time trains run on the left hand track, *i.e.* they pass those travelling in the opposite direction on the right hand, in Great Britain and all countries of the British Commonwealth (except Canada), in South America, China, Egypt, and Japan, and, among European countries, in Austria and her succession states (with the exception of some sections of line), Belgium, France (excepting Alsace-Lorraine and on the Paris Metro), Hungary, Italy, Portugal, Sweden, and Switzerland, and on the Northern Railway of Spain.

Right hand running is in force in Canada, the United States of America (except on the Chicago and North Western, which, originally an English concern and called " railway " not " railroad," runs left handed), Soviet Russia, Turkey, and (in Europe) the Baltic States, Denmark, Finland, Germany, Holland, and Norway, and on the M.Z.A. of Spain. There was once another exception in the U.S.A., namely, the Lake Shore & Michigan Southern, now part of New York Central system which was changed over to right hand running about 1909-1910. In Great Britain, the Festiniog Railway has always followed right hand running at the passing loops, and for many years the Greenwich line, between London Bridge and Charlton, was worked right handed, but was changed over on Sunday, May 26, 1901. Incidentally, the following warning notice to passengers was posted inside the carriage doors of trains travelling over the section to remind them of the changeover :—

SOUTH EASTERN & CHATHAM RAILWAY

CAUTION !

REVERSAL OF GREENWICH LINES

The working of trains being reversed on the Greenwich lines between London Bridge and Charlton stations, passengers are cautioned, before alighting, to see that they are alongside the platform.

By Order,
VINCENT W. HILL,
General Manager.

In the neighbourhood of frontiers—old and new—mixed arrangements apply. Thus the Alsace-Lorraine section from the old frontier (near Avricourt) to Saarbourg, is now left handed, with a flying junction near the latter place to cross the lines over. Similar arrangements are found on the line to Metz, and so on. From Kleinbettingen to Luxembourg, worked by the Alsace-Lorraine administration, left hand running is followed, but German signalling is in use. At Esschen, where the Antwerp-Rosendaal line enters Holland from Belgium, the lines cross over on the level. Sometimes for convenience a short piece of line is worked contrary to the general practice. Thus, approaching Nuremberg from Halle trains travel through two or three stations left-handed, no doubt to enable the lines to fit in more conveniently with others at the adjacent junctions. This is often found (as near Metz) from a frontier (or old frontier) to a nearby junction station.

In some countries where the English left-hand running was copied at the outset, proposals to change to right-hand running were from time to time entertained, as in Switzerland, but came to nothing. Portions of line were reversed in old Austria, after some agitation, with the result that there is now a certain amount of right hand working in Czechoslovakia.

Closed Branch Lines—I

The Great Southern Railways of Ireland

During the last few years increasing co-ordination between rail and road services has enabled certain branch lines handling light traffic to be closed entirely, and also made possible the withdrawal of passenger services on other lines. In order to preserve these details in collated form we are preparing a series of tables, of which that below is the first. The Great Southern Railways Company began to operate its own road motor coaches to a limited extent in June, 1924, and, following the passage in the Irish Free State of the Railways (Road Motor Services) Act of 1927, entered into a working agreement with the Irish Omnibus Co. Ltd. in July of that year. Then, in August, 1929, a controlling interest in the Irish Omnibus Company was acquired by a group of shareholders closely identified with the Great Southern Railways Company, and much closer co-operation was introduced on September 1, including the arrangement of interavailability between road and rail return tickets. On the freight side, a controlling interest was bought in the firm of John Wallis & Sons Ltd. On January 1, 1934, the Great Southern absorbed completely the undertakings of the Irish Omnibus Co. Ltd. (passenger), and John Wallis & Sons, Ltd. (goods); these arrangements have enabled the Great Southern to rationalise many services, and to withdraw rail facilities as below :—

Section of Line (5 ft. 3 in. gauge, unless otherwise noted under Remarks)	Passenger Service Withdrawn	Branch Completely Closed	Remarks
Castlecomer Junction to Castlecomer	January 26, 1931	—	—
Bagenalstown to Palace East	February 2, 1931	—	—
Enfield to Edenderry ...	June 1, 1931	September 1, 1932	Except for weekly cattle train
Birdhill to Killaloe	August 17, 1931	—	—
Kinsale Junction to Kinsale	—	September 1, 1931	—
Ballina to Killala	October 1, 1931	July 2, 1934	—
Monkstown to Crosshaven ...	—	June 1, 1932	Cork, Blackrock, and Passage line, 3 ft. gauge
Cork to Monkstown ...	—	September 12, 1932	Cork, Blackrock, and Passage line, 3 ft. gauge
Cork to Donoughmore ...	—	December 31, 1934	Cork & Muskerry Light Railway, 3 ft. gauge
Coachford Junction to Coachford	—	December 31, 1934	Cork & Muskerry Light Railway, 3 ft. gauge
Tralee to Fenit	December 31, 1934	—	—
Westport to Achill	December 31, 1934	—	Service temporarily resumed on April 20, 1936, to facilitate highway reconstruction
Patrick's Well to Charleville	December 31, 1934	—	—
Galway to Clifden	—	April 29, 1935	—
Cork to Macroom	June 30, 1935	—	—

MINISTRY OF TRANSPORT ACCIDENT REPORT

Tottenham, L.N.E.R.: May 12, 1936

The 9.36 a.m. empty carriage train from Liverpool Street ran into the rear of the 10.5 a.m. goods, Temple Mills to Broxbourne, which had just started from the down goods drawahead signal at Tottenham North Junction, protecting the trailing connection between that line and the carriage sidings. Guard R. Halls, of the goods train, was killed, and guard F. Clements, of the empty train, slightly injured. The latter train had 10 bogie coaches and was hauled by a 4-6-0 engine No. 2809, running tender first, with Westinghouse brake on all except its bogie wheels, controlled by the vacuum ejector operating the brake on all wheels of the train. The goods train had 17 wagons and 2 vans marshalled together, hauled by 4-4-0 tender engine No. 8838. Both vans were badly smashed and six wagons were damaged. The tender of the empty carriage engine was derailed and damaged an underbridge. The weather was fine and the rails dry. Major G. R. S. Wilson inquired into the accident, which occurred about 10.17 a.m.

The down goods line leaves the down passenger at Copper Mill junction, about 1¼ miles south of Tottenham, the carriage sidings at the latter place are entered through the trailing connection above mentioned, and the collision occurred at a point 159 yd. in rear of the protecting signal. The line approaches this point on a continuous right handed curve of 40 ch. radius for 1,110 yd. from Copper Mill Junction box, the gradient being level from there for 530 yd. and 1 in 290 rising thereafter, and is not worked on any block system. It is really a long reception line, and train working is governed by the following extract from a supplement to the appendix to the working timetables:—

> Drivers of trains and engines working over these lines will not receive any Caution signal on entering thereon, whether the line is occupied or not, and must at all times be prepared to stop clear of any obstruction that may be in front of them. Drivers must not assume on approaching the signal box ahead that the fact of the signals being off is an indication that the line is clear for their trains.

The goods train was stopped at the signal above referred to, which stands "off" unless a train is to be shunted into the sidings, while an empty stock train was being so dealt with. The 9.36 a.m. empty stock train was also due to terminate at Tottenham and was brought almost to a stand at Copper Mill Junction before being admitted to the down goods line. Relief Signalman C. Grice said it passed at the normal speed of 8 or 10 m.p.h.; the engine was steaming lightly. Signalman R. C. Wright, Tottenham South Junction, who has no work to do with the goods lines, observed the empty train 50 yd. before his box going "a little faster than usual" and shouted, as it passed, that there was a goods train ahead. Driver B. A. Matthews, of the empty train, was well acquainted with the goods lines and the instructions for them. He looked out of the right hand (as running) cab side window passing Copper Mill box and noticed the line was clear as far as he could see. He then handed over control to his fireman, A. R. B. Innes, crossed over and drew water from the coal watering hose. After doing so he looked out on the left side (as running) but saw nothing ahead; the fireman was looking over the top of the tender.

Matthews never saw the goods train, and said the brake was not applied till after the collision, which took place at about 8 m.p.h. He did not know Innes well—he was not his regular mate—but considered him reliable; nor did he think it wrong to hand over control to him, though he realised the responsibility was still his. Innes admitted that he maintained his lookout over the top of the tender and never looked through the cab side window. His speed, with steam off, was about 10 m.p.h. He saw the signal at Tottenham North was at danger and made a moderate brake application, but seeing it later go to clear released the brake. He heard the shout from Wright and almost immediately the collision occurred. He never saw the goods train. Guard F. Clements said his usual practice on this line was to look out on the right-hand side to see if there was anything ahead but he did not do so on this occasion. The speed hardly varied from about 8 to 10 m.p.h.

Major Wilson travelled over the line with a similar engine, tender first, hauling the train concerned; the 10.5 a.m. goods, of practically the same length as before, stood at the signal. He found it impossible to see anything of the line over the top of the tender, but could see the signal at from 500 to 600 yd. Looking out on the right hand side, as running, he could clearly see the brake van ahead at about ¼ mile.

Inspecting Officer's Conclusions

This accident was due primarily to failure on the part of Fireman Innes, who knew he could expect the line to be clear only as far as he could see, and it is therefore difficult to understand how he placed himself where the line was invisible, when an ample clear view could be obtained from the cab side window. He was not paying proper attention to duty.

The company's officers agree with Major Wilson that Driver Matthews can hardly be criticised for handing over control to an experienced fireman, in the circumstances, but he must also bear a considerable measure of responsibility. He failed to exercise adequate supervision. He was familiar with the type of engine and route, and should have appreciated that Innes' lookout over the tender was inadequate. Both men have good records and neither made any attempt to excuse his failure. Even had Guard Clements been looking out on the proper side, Major Wilson thinks he would not have been able to realise in time, from the rear of a 200 yd train, that a collision was imminent, and he places no responsibility on him. Signalman Wright was quick to appreciate the situation.

Major Wilson makes no recommendation, as he thinks the method of working a suitable one at this place. The Regulations make it quite clear that drivers must be prepared to stop short of any obstruction, and their simple duty is to keep a proper lookout and regulate speed accordingly at all times.

An Important Asbestos Development

With all its valuable fire-resisting properties, asbestos has hitherto been associated with certain qualities of texture and colour which limited its sphere of use. The Emperor Charlemagne used asbestos tablecloths, but it was to mystify his guests by their refusal to ignite when blazing torches were laid upon them, rather than because they were decorative or pleasant to the touch. For asbestos cloth possesses naturally a clamminess and a tendency to fluff, while hitherto attempts to colour it have been largely experimental. It was a somewhat utilitarian material, which did not recommend itself to the exacting authorities who regulate the domestic portion of the national life.

To adapt asbestos for domestic purposes, whether in home, hotel, or in that mobile combination of the two—the railway train — has been the achievement of a firm long associated with the production and sale of asbestos goods. Bell's Asbestos and Engineering Supplies Limited can now supply asbestos cloth with a finish which enables it to rank as a textile. It has been successfully dyed, and the combination of these important advances in the quality and colour of the material now recommend it for a variety of purposes hitherto closed to it. An exhibition of Bell's asbestos cloth has recently been held in London, where it was seen made up into aprons, gloves, table mats, rugs, and blankets. The cloth is soft and free from fluffiness, so that, whereas asbestos has hitherto been worn only for emergency fire-fighting purposes, it can now be regarded as a material for articles of clothing which afford permanent fire protection.

In its new colours, asbestos cloth becomes a decorative medium, and with the increasing use of fabric panelling for interior walls there are new possibilities for its application. The material can be washed, but with all its new properties retains unimpaired the fire-resisting qualities of asbestos in its more familiar form.

Southern Railway Television Shows

A waiting room at Waterloo station, Southern Railway, has been temporarily fitted up as what is claimed to be the first public television theatre—apart from those arranged at exhibitions or on other special occasions—in Great Britain. The company is thus offering to its patrons the opportunity of seeing in comfort the inaugural B.B.C. television programmes transmitted from the Alexandra Palace in conjunction with the radio exhibition now running at Olympia, and must be a pioneer in offering passengers the entertainment of "looking-in" included in their fare, for admission is conditional only upon production of railway tickets.

Baird Television Limited has collaborated with the Southern Railway in this venture by arranging for the installation of a type T.5 high-definition Televisor (for sound and vision), which is connected by a lead-in 200 ft. long to a vertical aerial on the roof of the station, 120 ft. above the ground. Demonstrations are being given daily until September 3, from 12 noon to 1.30 p.m., and from 4.30 to 6 p.m. As the size of the audience that can be seated is at present limited to twenty-five, the room is cleared for a new set of spectators every five minutes, and the waiting queue is thus kept within manageable bounds. The service was inaugurated on Wednesday, when we had the opportunity of seeing a programme of direct television and televised films. In quality, the films had slightly the better of it, but the direct transmissions of living subjects produced pictures of a surprisingly good gradation, perspective, and detail. The screen on which they are shown measures about 12 in. × 9 in. A particularly noticeable feature was the absence, at least to the non-expert eye, of interference from the nearby electric trains or other machinery, which has been suggested as a possible stumbling block to television reception.

Ernst Dircksen: A Forgotten Railway Pioneer

Amid the numerous celebrations occasioned by the German and other railway centenaries, and the many books, pamphlets, and articles associated therewith, the memory of a German engineer of great talent, Ernst Dircksen, has been overlooked. This is the comment of a writer in *Der Eisenbahnfachmann*, who proceeds to give some details of his life. A native of Danzig, born on May 31, 1830, Dircksen entered the Prussian Civil Service as an engineer when quite young, and was engaged from 1853 to 1856 on the building of the Vistula bridge at Dirschau, and the Rhine bridge at Cologne, two of the most important works of the kind at that time.

In 1877 he was entrusted with the construction of the Berlin Circle Railway, or Ringbahn, part of a scheme to connect the new industrial areas springing up outside the old city limits with the residential and business quarters. Such a four-track line was something unheard of in Germany up to then, but Dircksen made his greatest reputation by building the City Railway, or Stadtbahn, across Berlin from Charlottenburg to the Silesian station, carried on a succession of brick arches and numerous bridges. The line was opened on February 7, 1882, and was described in THE RAILWAY GAZETTE for August 25, 1933. It provides a direct east to west main and suburban route through the German capital, and enables many very convenient services to be provided. The local services are now all electrically operated. In addition to the viaduct and track, several quite imposing stations with all-over arched roofs were built, the whole forming a piece of civil engineering of much merit. Some of the ground traversed was difficult to deal with and necessitated special foundations.

In the Franco-Prussian war of 1870, Dircksen achieved some notoriety by constructing a special field railway to establish communication right round the besieged city of Metz, an early example of the strategic use of railways. He was also much occupied in Western Germany and, stationed at Cologne, was given charge of all civil engineering work on the left bank of the Rhine in Prussian territory, and constructed the Cologne Central station and City Railway. Several important lines were built by him in the Hunsrück district and the mountains of Thuringia, when he was stationed at Erfurt. He is said to have had a phenomenal capacity for work, seldom bothering about holidays. A bust of him may be seen at the Friedrichstrasse station in Berlin, the centre of the Stadtbahn, while he is also commemorated in the Dircksenstrasse, near the Börse station, named after him. (In some printed accounts of his life his name is found spelt "Dirksen," in others as above given.)

RAILWAY AND OTHER REPORTS

Southdown Motor Services Limited.—An interim dividend of 5 per cent., less tax, payable September 30, has been declared on the ordinary shares, the same as a year ago.

R. & W. Hawthorn, Leslie & Co. Ltd.—The directors recommend a dividend of 6 per cent. on the ordinary capital for the year ended June 30 last. For the previous year the dividend was 5 per cent.

Ransomes & Rapier Limited.—An interim dividend of 2½ per cent., free of tax, will be paid on the ordinary shares on September 15. No interim distribution was made in 1935, but 2½ per cent., free of tax, was paid for the whole year.

Shahdara (Delhi)- Saharanpur Light Railway.—Gross earnings for the half-year to March 31 last were Rs. 5,28,103, an increase of Rs. 91,223, or 17·27 per cent., over the corresponding period of 1935. Working expenses, including depreciation, amounted to Rs. 2,34,633, a net increase of Rs. 2,297, and the net earnings of Rs. 2,93,470 showed an improvement of Rs. 88,926. The operating ratio was 55·57 per cent. against 46·82 per cent. Net profit, after providing for prior charges, amounts to Rs. 97,187, against Rs. 51,834, and the balance available for distribution, including Rs. 6,74,350 brought forward, is Rs. 7,71,537. A dividend at the rate of 8 per cent. per annum is recommended, requiring Rs. 60,000, and leaving Rs. 7,71,537 to be carried forward. The dividends paid for the two preceding half-years were at the rate of 6 per cent. and 7 per cent. per annum.

Buffalo & Lake Huron Railway.—The report for the half-year to June 30 last of this railway of 163 miles, which was leased in 1870 in perpetuity to the Grand Trunk Railway Company of Canada, and is now merged in the Canadian National Railways, states that after providing for interest on the first and second mortgage bonds and other charges, the available balance, including the amount brought in, is £15,498. The directors recommend the usual dividend of 5s. on each £10 share, leaving £2,370 to be carried forward.

YORKSHIRE TRACTION BONUS ISSUE.—The directors of the Yorkshire Traction Co. Ltd. propose to make a free bonus issue of one ordinary for every five ordinary shares held. This will involve the issue of 50,000 £1 ordinary shares and an increase in the capital from £300,000 to £350,000. Formed in 1902 to operate tramways in Barnsley, the company is jointly controlled by Tilling & British Automobile Traction Limited, the L.N.E.R., and the L.M.S.R. The company owns and operates bus services in Barnsley and surrounding districts.

GREAT WESTERN RAILWAY.

CHEAP EASTER EXCURSION

ON

GOOD FRIDAY & EASTER MONDAY,

APRIL 19th and 22nd, 1867,

AN EXCURSION TRAIN

FOR

BIRMINGHAM,

WEST BROMWICH, WEDNESBURY, BILSTON, WOLVERHAMTPON,

WELLINGTON, SHREWSBURY, OSWESTRY,

CORWEN, LLANGOLLEN, RUABON, AND WREXHAM,

WILL RUN AS UNDER:—

FROM	Time of Starting April 19th.	Time of Starting April 22nd.	FARES FOR THE DOUBLE JOURNEY TO Birmingham. 1st Class.	Cov. C.	Bilston, Wednesbury, or West Bromwich. 1st Cl.	Cov. C.	Wolverhampton. 1st Cl.	Cov. C.	Shrewsbury or Wellington. 1st Cl.	Cov C	Oswestry or Llangollen. 1st Cl.	Cov C.	Corwen. 1st Cl.	Cov C.	Ruabon or Wrexham. 1st Cl.	Cov C.
	a. m.	a. m.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
CHESTER	8 35	7 35	10 0	6 0	9 0	5 6	8 0	5 0	5 6	3 0	5 0	2 6	6 0	3 6	4 0	2 0
WREXHAM	9 5	8 10	9 0	5 0	8 0	4 6	7 6	4 0	5 6	3 0	-	-	-	-	-	-
RUABON	9 20	8 25	9 0	5 0	8 0	4 6	7 6	4 0	5 6	3 0	-	-	-	-	-	-
OSWESTRY	9 20	8 30	9 0	5 0	8 0	4 6	7 6	4 0	5 6	3 0	-	-	-	-	-	-
GOBOWEN	9 35	8 45														

Children under Twelve Years of Age, Half-Price.

RETURNING AS FOLLOWS:—

Passengers going on GOOD FRIDAY, April 19th, can Return same day,

From Snow Hill Station, Birmingham, at 6.30 p.m.; West Bromwich, at 6.45; Wednesbury, at 6.55; Bilston, at 7.0; Wolverhampton, at 7.10; Wellington at 8.0; Salop, at 8.25; Oswestry, at 8.30; Corwen, at 9.0; Llangollen, at 8.30; Ruabon, at 9.25; and Wrexham, at 9.40 p.m.; or with the Return Excursion on Monday, 22nd April.

Those going on Monday, 22nd April, can Return same day from Birmingham, at 6.0 p.m.; West Bromwich, at 6.15; Wednesbury, at 6.25; Bilston, at 6.30; Wolverhampton, at 6.40; Wellington, at 7.30; Shrewsbury, at 7.55; Oswestry, at 8.30; Corwen, at 7.40; Llangollen, at 8.0; Ruabon, at 8.35; and Wrexham, at 9.10 p.m.; or on Tuesday, April 23rd, from Birmingham, at 4.35.; West Bromwich 4.50, Wednesbury 5.0, Bilston 5.10, Wolverhampton 5.30, Wellington 6.15, Shrewsbury 6.40, Oswestry 6.50, Corwen 5.10, Llangollen 5.45, Ruabon 7.40, and Wrexham at 7.55 p.m.

Tickets not Transferable, and are only available to and from the Stations named upon them by the Trains specified in the Bill. Passengers are only allowed One Package of Personal Luggage Free, but it must be distinctly understood that it is entirely at their own risk.

TICKETS and BILLS can be had at any of the above Stations, or from Mr. DAVIES, Great Western Office, Eastgate Street, Chester.

J. GRIERSON, General Manager.

GREAT WESTERN RAILWAY.

On Mondays, Sept. 2, 16, 30, and Oct. 7,

CHEAP EXCURSION TRAINS,

Last of the Season,

FOR

CHESTER, BIRKENHEAD AND LIVERPOOL,

Returning the same days from LIVERPOOL (Landing Stage) at 6.50 p.m., BIRKENHEAD at 7.10. and CHESTER at 8.0 p.m., also for the

ISLE of MAN,

Allowing FOURTEEN DAYS from the date of issue, will run as under:

FARES FOR THE DOUBLE JOURNEY.

FROM	Time of Starting a m	TO CHESTER. 1st CLASS	COV CAR.	TO BIRKENHEAD OR LIVERPOOL. 1st CLASS	COV CAR.	TO THE ISLE OF MAN. 1st Class and Saw Cabin.	Cov Carriages and Fore Cabin.
		s. d.	s. d.	s. d.	s. d.	s. d.	s. d.
Shrewsbury	7 0						
Baschurch	7 20	6 0	3 0	8 0	4 0	19 0	9 6
Rednall	7 35						
Whittington	7 45						
Oswestry	7 50	5 0	2 6	6 0	3 0	17 0	8 6
Gobowen	8 0						
Corwen	6 10	6 0	3 0	7 0	3 6	18 0	9 0
Llangollen	6 45						
Trevor	6 55	5 0	2 6	6 0	3 0	17 0	8 6
Acrefair	7 0						
Chirk	8 10						
Ruabon	8 25	—	—	5 0	2 6	16 0	8 0
Wrexham	8 40						

Children under Twelve Years of Age, Half-price.

The Isle of Man Steamers "Mona's Queen," "Mona's Isle," "Douglas," "Snaefell," or "Tynwald," leave the North Landing Stage, Liverpool, as per Isle of Man Sailing Bills.

Passengers can return from Douglas any day the Boat sails within fourteen days, exclusive of the date of issuing the Tickets, and by the Boat leaving Liverpool at 4.30 p.m., and the Train from Birkenhead at 4.50 p.m (except on Sundays, when they must return from Liverpool at 8.0, and Birkenhead at 8.30 a.m.) thus enabling them to accomplish the whole journey in one day, providing the Boat arrives in Liverpool in time to catch the Train from Birkenhead; but the Railway Company will not be responsible for any delay, either caused by the Train or Steamboat. Passengers may also return (within 14 days) on Mondays, September 9th and 23rd, from Liverpool at 6.5, and Birkenhead at 6.30 p.m.; also on Mondays, September 16th, 30th, and October 7th, from Liverpool at 6.50 and Birkenhead at 7.10 p.m.

Tickets, Bills, and every Information to be had at the above-named Stations. The Tickets are not Transferable, and are only available to and from the Stations named upon them, and by the Trains specified in the Bills.

AUGUST, 1867. JAMES GRIERSON, General Manager.

TWO CHEAP EXCURSION POSTERS OF 1867. *(See paragraph opposite)*

NOTES AND NEWS

Improvements at Hull Docks.—The L.N.E.R. is about to equip several cranes at the King George and Alexandra docks, Hull, with special Barnard grabs to facilitate the discharge of scrap metal. Similar grabs were recently installed at the railway company's West Hartlepool docks.

New L.M.S.R. Station on Manchester-Bury Electric Line.—In order to cater for a growing residential district, the L.M.S.R. has decided to provide a new passenger station at Middleton Road, midway between Heaton Park and Crumpsall on the electric line from Manchester (Victoria) to Bury.

Nitrate Railways.—Arising out of the negotiations still proceeding with the Chilean Government, it has been arranged that the company shall continue to operate the Iquique-La Noria concession probably until February 1 next. The company will be required to pay a rental during the period based on the traffic handled, but this has not yet been definitely fixed.

German Sightseeing Railcar.—A touring diesel railcar fitted with a sliding roof, has now been introduced by the German State Railway for excursions in the Rhineland. Unlike the "glass trains" in service on the railways near Munich, it is not confined to electrified sections. The movable roof can be rolled back in two sections by electrical mechanism.

Mill Hill Goods Depot, Blackburn, to Close.—From Thursday, October 1, the L.M.S.R. Mill Hill goods depot, Blackburn, will be closed for all classes of traffic. Ample depot and warehousing accommodation exists at other Blackburn depots for coal and other classes of merchandise, and enquiries should be made to Mr. F. Bentley, Goods Agent, Bolton Road goods station, Blackburn.

L.M.S.R. Sheffield Scheme.—Additional siding accommodation for stabling empty trains is to be provided by the L.M.S.R. at three points in the Sheffield district; and this will considerably facilitate passenger traffic working, especially at busy holiday times. The largest group of sidings will be at Dore and Totley (five sidings with a total capacity of 46 vehicles), and the others at Heeley (one siding holding 10 vehicles), and Nunnery (three sidings with a total capacity of 18 vehicles).

Excursions of 1867.—During the holiday season it is always fascinating to compare facilities of the present day with those of the mid-Victorian period, and a good opportunity to indulge in such comparisons is afforded by the two bills we reproduce on the opposite page. These have just come to light, and we are indebted to Mr. J. R. Morris, Divisional Superintendent, Chester, G.W.R., for lending them to us. The left-hand (Good Friday) bill was discovered near Chester, and the right-hand (September) bill at Corwen. Among the many points of interest are the quotation of fares for "covered carriages," and the similarity of the names of the Isle of Man steamers with those of today's fleet.

Important Leicester Bus Transfer.—The Birmingham & Midland Omnibus Co. Ltd. (a railway associate) has bought the undertaking of the Leicester & District Bus Company. The latter, which is known popularly as the Green Bus Service, was established in 1919 and now works about two dozen single-deck buses in the neighbourhood of Leicester and also on summer express services from its home town to East Coast holiday resorts.

Reopening of King's Ferry Bridge, Isle of Sheppey.—The Southern Railway King's Ferry bridge, carrying road and rail traffic across the River Swale to the Isle of Sheppey, which, as recorded on page 309 last week, was closed to all traffic for repairs at midnight (Monday-Tuesday) on August 17, was reopened for road vehicles on August 21 at 3.50 p.m., and for railway traffic at 8 p.m. It will be recalled that the train service across the bridge was suspended, following damage to the locking gear, on August 14. An editorial article on page 288 last week gave a history of rail connections between the mainland and Sheppey.

Forthcoming Completion of Swedish Inland Railway.—The whole of the so-called Inland Railway of Sweden, uniting Kristinehamn on Lake Vaenern in the south with Gaellivare in the north, is expected to be completed next month (September), states a Reuters message from Stockholm. Construction has been going on from both ends of the line and the two sections will join up in the region of Kaabdalis (Lapland). The line, which is owned by the State Railways, is not likely to be very remunerative, as it runs through extremely sparsely populated regions, but is of considerable developmental, cultural, and military importance.

Charing Cross Bridge.—Charing Cross station, Southern Railway, is to remain on the north side of the Thames, with a combined rail and road bridge leading to the south, if the recommendations of the London and Home Counties Traffic Advisory Committee on Charing Cross bridge are adopted. The principal proposals of the committee contained in the report, issued on Wednesday as a blue book are: a tunnel, by reason of its necessary depth, could not be regarded as an alternative to a bridge, and the necessary improvements of the cross-river facilities in the neighbourhood of Charing Cross cannot be provided by other means than a new bridge; and if such a bridge is to be constructed, it is essential that adequate approaches should be provided both on the north and south of the Thames. A diagram is submitted, incorporating a combined road and rail bridge, and containing five railway tracks, instead of seven, on the existing railway bridge. The necessity of an early decision is urged. While the total expenditure would be large (no estimate is given), it is pointed out that the cost would relate not only to the bridge but to the re-planning of the central area.

New French Diesel Service.—The first of the new Nord triple-car diesel-electric trains is now operating a cross-country service between Lille and Le Havre, over the lines of the Nord and Etat systems. The route followed is via Amiens and Rouen. The train leaves Lille at 9.20 and is due in at Le Havre at 13.00; the return trip begins at 18.40 and Lille is reached at 22.20. The Lille-Paris return service which has been in operation since July, 1934, has been supplemented by another train leaving Lille at 8.32 and reaching Paris at 11.07. The return train leaves Paris at 12.05 and reaches Lille at 14.40. This trip actually begins and ends at Tourising. A top speed of 87 m.p.h. (140 km.p.h.) is allowed. Further French railcar and diesel train runs are mentioned in the editorial on page 328.

The Spanish Civil War.—Although the Government forces hold all the ports and railway connections on the East and South Coasts, as far west as Malaga, and also the Biscayan ports in the north, the insurgents have occupied the main line from Galicia, which gives them rail communication between the Atlantic ports of Vigo and Corunna and their main forces, and ensures their access to the sea. They hold also Seville with its navigable river, and the railways radiating from Seville in the direction of Malaga, Cordoba, and Granada. An announcement by Sir Auckland Geddes, Chairman of the Rio Tinto Co. Ltd., states that he received a telegram on the night of August 26, announcing that the insurgents had occupied the company's copper mines, 53 miles north of Huelva, which were, however, safe. According to *The Times*, the port of Huelva is still held by Government forces, but it is now threatened not only via the Seville-Huelva railway, but also from the north.

Rolling Stock Exhibition at Sunderland.—Mr. C. M. Jenkin Jones will make his first appearance as Divisional General Manager of the North Eastern Area of the L.N.E.R. when he presides at the opening ceremony of the exhibition of railway rolling stock to be held at Sunderland on Sunday, September 13. The exhibition will be opened at 10 a.m. by the Mayor of Sunderland, Alderman T. Summerbell, J.P., who will be supported by the Corporation of Sunderland. Music will be provided by the Sunderland Constabulary and other bands, and 50 per cent. of the proceeds will go in aid of the Sunderland hospitals and the remainder will be divided between the Railway Cottage

J. GRIERSON, General Manager. TWO CHEAP EXCURSION POSTERS OF 1867. (See paragraph opposite) JAMES GRIERSON, General Manager.

Homes and the Railway Convalescent Homes. This exhibition will afford an opportunity of seeing some of the latest locomotives in L.N.E.R. service, including No. 2854, named after the Sunderland Football Club.

Road Accidents.—The Ministry of Transport return for the week ended August 22 of persons killed or injured in road accidents is as follows. The figures in brackets are those for the corresponding period of last year :—

	Killed, including deaths resulting from previous accidents		Injured	
England ...	112	(110)	4,681	(4,354)
Wales	5	(9)	211	(234)
Scotland ...	18	(11)	511	(486)
	135	(130)	5,403	(5,074)

The total fatalities for the previous week were 108, compared with 138 for the corresponding period of last year.

German Road Accidents.—An interesting comparison with the table of British road accidents is provided by some German figures issued by the Reich Minister of Transport, which state that last week 143 persons were killed and 4,273 injured in traffic accidents. The number of persons killed declined by 6 compared with the previous week, but the number of injured increased by 480. During the past two and a half months, 1,338 persons were killed in traffic accidents, and 41,969 injured.

The Oriental Railways Company.—A message from Istanbul states that negotiations have been begun between the Turkish Government and the shareholders of the Oriental Railways Company for the transfer of that undertaking to the Government. The company works the railways of European Turkey, and the proposal to nationalise its business was referred to on page 1203 of our issue of June 26 last. When purchase arrangements have been concluded it is understood that the Government will realign the railway so as to make it accord with modern requirements in respect of the fortification of the Straits. It is anticipated that much of the line will go further inland. A subsidiary line will be from Adrianople (Edirne) to Kirkilise.

British and Irish Traffic Returns

GREAT BRITAIN	Totals for 34th Week			Totals to Date		
	1936	1935	Inc. or Dec.	1936	1935	Inc. or Dec.
	£	£	£	£	£	£
L.M.S.R. (6,916¾ mls.)						
Passenger-train traffic...	582,000	567,000	+ 15,000	17,108,000	16,854,000	+ 254,000
Merchandise, &c. ...	485,000	445,000	+ 40,000	15,920,000	15,008,000	+ 912,000
Coal and coke ...	242,000	219,000	+ 23,000	8,090,000	7,675,000	+ 415,000
Goods-train traffic ...	727,000	664,000	+ 63,000	24,010,000	22,683,000	+ 1,327,000
Total receipts	1,309,000	1,231,000	+ 78,000	41,118,000	39,537,000	+ 1,581,000
L.N.E.R. (6,332 mls.)						
Passenger-train traffic...	433,000	406,000	+ 27,000	11,085,000	10,957,000	+ 128,000
Merchandise, &c. ...	314,000	284,000	+ 30,000	10,820,000	10,409,000	+ 411,000
Coal and coke ...	232,000	225,000	+ 7,000	7,809,000	7,414,000	+ 395,000
Goods-train traffic ...	546,000	509,000	+ 37,000	18,629,000	17,823,000	+ 806,000
Total receipts	979,000	915,000	+ 64,000	29,714,000	28,780,000	+ 934,000
G.W.R. (3,746¼ mls.)						
Passenger-train traffic...	285,000	281,000	+ 4,000	7,187,000	7,138,000	+ 49,000
Merchandise, &c. ...	190,000	176,000	+ 14,000	6,345,000	6,079,000	+ 266,000
Coal and coke ...	102,000	103,000	− 1,000	3,378,000	3,316,000	+ 62,000
Goods-train traffic ...	292,000	279,000	+ 13,000	9,723,000	9,395,000	+ 328,000
Total receipts	577,000	560,000	+ 17,000	16,910,000	16,533,000	+ 377,000
S.R. (2,154 mls.)						
Passenger-train traffic...	408,000	383,000	+ 25,000	10,522,000	10,431,000	+ 91,000
Merchandise, &c. ...	66,000	64,000	+ 2,000	2,088,500	2,070,500	+ 18,000
Coal and coke ...	32,000	31,000	+ 1,000	1,047,500	990,500	+ 57,000
Goods-train traffic ...	98,000	95,000	+ 3,000	3,136,000	3,061,000	+ 75,000
Total receipts	506,000	478,000	+ 28,000	13,658,000	13,492,000	+ 166,000
Liverpool Overhead ... (6¼ mls.)	1,389	1,414	− 25	40,721	40,580	+ 141
Mersey (4½ mls.) ...	3,655	3,598	+ 57	136,550	135,632	+ 918
*London Passenger Transport Board ...	545,400	519,200	+ 26,200	4,421,600	4,308,300	+ 113,300
IRELAND						
Belfast & C.D. pass. (80 mls.)	3,970	3,562	+ 408	89,306	89,556	− 250
,, ,, goods	463	498	− 35	18,539	16,991	+ 1,548
,, ,, total	4,433	4,060	+ 373	107,845	106,547	+ 1,298
†Great Northern pass. (543 mls.)	15,450	13,550	+ 1,900	358,100	347,100	+ 11,000
,, ,, goods	9,050	8,700	+ 350	314,000	304,450	+ 9,550
,, ,, total	24,500	22,250	+ 2,250	672,100	651,550	+ 20,550
†Great Southern, pass. (2,076 mls.)	56,018	50,288	+ 5,730	1,190,888	1,173,412	+ 17,476
,, ,, goods	40,146	33,418	+ 6,728	1,337,894	1,246,651	+ 91,243
,, ,, total	96,164	83,706	+ 12,458	2,528,782	2,420,063	+ 108,719

* 8th week. † 33rd week.

British and Irish Railways Stocks and Shares

Stocks	Highest 1935	Lowest 1935	Prices Aug. 26, 1936	Prices Rise/Fall
G.W.R.				
Cons. Ord. ...	55½	44½	50	−1
5% Con. Prefce. ...	124	108	120½	—
5% Red. Pref. (1950)	117	106¾	109½	—
4% Deb.	118½	108	115	—
4½% Deb.... ...	122	110	117½	—
4½ Deb.	129½	118	125	—
5% Deb.	140¼	130	136½	—
2½% Deb.... ...	82¼	68½	76	—
5% Rt. Charge ...	137	128	134½	—
5% Cons. Guar. ...	136¾	120½	131	—
L.M.S.R.				
Ord.	25 5/16	16	28	—
4% Prefce. (1923)	58¼	43½	77	—
4% Prefce. ...	87½	73½	87	—
5% Red. Pref. (1955)	107	97¾	106½	—
4% Deb.	110¼	99½	107	—
5% Red. Deb. (1952)	119 11/16	111 5/16	116½	—
4% Guar. ...	105⅝	95½	103½	−½
L.N.E.R.				
5% Pref. Ord. ...	157⅛	8¼	13½	+½
Def. Ord.	7 9/16	4¾	6¾	—
4% First Prefce.	74¾	48	75	+½
4% Second Prefce.	31¾	16¼	30	+½
5% Red. Pref. (1955)	92¼	71	96½	—
4% First Guar. ...	103 11/16	93	101	—
4% Second Guar.	98¾	82½	95	—
3% Deb.	86	75	82	—
4% Deb.	109¼	98½	106	—
5% Red. Deb. (1947)	118¼	106½	111½	—
4½% Sinking Fund Red. Deb.	112½	108	109	—
SOUTHERN				
Pref. Ord.... ...	87½	69⅝	92	—
Def. Ord.	25 13/16	16¾	23	+½
5% Prefce. ...	124	108¼	120½	—
5% Red. Pref. (1964)	117⅝	109½	116½	—
5% Guar. Prefce.	136½	121½	131½	—
5% Red. Guar. Pref. (1957)	121¼	112½	117½	—
4% Deb.	116¾	107	113½	—
5% Deb.	138	130¼	135½	—
4% Red. Deb. 1962–67	115	106½	111½	—
BELFAST & C.D.				
Ord.	9	4	5	—
FORTH BRIDGE				
4% Deb.	111¼	104¼	104½	—
4% Guar.	109⅞	104	104½	—
G. NORTHERN (IRELAND)				
Ord.	20	7	14⅜	+⅛
G. SOUTHERN (IRELAND)				
Ord.	57½	14½	58	—
Prefce.	50	25¼	60	—
Guar.	88¾	51¼	89¾	—
Deb.	86¼	70	94	−1
L.P.T.B.				
4½% "A" ...	130	119¾	122½	—
5% "A" ...	139¾	130	134½	—
4½% "T.F.A." ...	113¾	108	109	—
5% "B" ...	131½	122¾	128½	—
"C"	109½	91	106	+1
MERSEY				
Ord.	231⅛	9¼	25½	—
4% Perp. Deb. ...	100½	93½	98	—
3% Perp. Deb. ...	75½	67	74½	—
3% Perp. Prefce.	62	47¼	64½	—

* ex dividend.

OFFICIAL NOTICES

The Bengal & North Western Railway Company Limited

THE Directors are prepared to receive Tenders for the supply of :—
1 Y.F. TYPE LOCOMOTIVE BOILER.
1 Y.B. " "
as per specification to be seen at the Company's Offices.

Tenders addressed to the undersigned, and envelope marked "Tender for Boilers," with name of firm tendering, to be lodged not later than Noon on the 22nd day of September, 1936.

For specification a fee of 10s. will be charged, which cannot, under any circumstances, be returned.

The Directors do not bind themselves to accept the lowest or any Tender.

By Order of the Board,
W. R. IZAT,
Managing Director.

237, Gresham House,
Old Broad Street,
London, E.C.2.
24th August, 1936.

Universal Directory of Railway Officials and Railway Year Book

42nd Annual Edition, 1936-1937

JUST PUBLISHED

Price 20/- net.

THE DIRECTORY PUBLISHING CO. LTD.
33, Tothill Street, London, S.W.1.

CONTRACTS AND TENDERS

Robert Stephenson & Co. Ltd. has received orders for two locomotive boilers, 23 steel firebox plates and 29 steel firebox tube plates from the Chinese Government Purchasing Commission and to be supplied to the inspection of Messrs. Sandberg.

New Sheds for Southampton Docks

A. J. Main & Co. Ltd. has received an order from the Southern Railway for the reconstruction of building sheds at Southampton Docks covering an area of approximately 56,000 sq. ft. The new sheds will be of steel construction ridge roofed and covered with corrugated galvanised iron sheeting.

The Siamese State Railways has placed the following orders for equipment to be supplied to the inspection of Messrs. Sandberg :—

Lemmentaler Hammerwerk, 1,000 buffer hooks.
Boulonneries de Ruau, 1,400,000 dogspikes.
Bierset Awans, 400 sets of slack gathering gear.

The British Thomson-Houston Co. Ltd. has received from the L.M.S.R. a contract for the supply of Mazda lamps during the three years ending July, 1939, and from the Southern Railway for twelve months ending August, 1937.

Leyland Motors Limited has received an order from Crosville Motor Services Limited for 82 Tiger vehicles, including 72 with oil engines.

The Metropolitan-Vickers Electrical Co. Ltd. has received a part contract from the L.M.S.R. for Cosmos electric lamps required for three years ending July 31, 1939.

Bulchumer Verein A.G. has received an order from the Bikaner State Railway, to the inspection of Messrs. Rendel, Palmer & Tritton, for 260 locomotive, carriage and wagon axles.

The Chinese Government Purchasing Commission, on behalf of the Ministry of Railways, China, has placed orders to the inspection of Messrs. Sandberg with J. Spencer Limited for 30 coil springs and with Jones Woodhead & Sons Limited for 68 laminated springs.

The Chinese Government Purchasing Commission has placed orders for equipment required for the Canton-Hankow Railway, to be supplied to the inspection of Messrs. Fox & Mayo, as follow : Glenfield & Kennedy Limited, cast-iron water columns ; and Reiss Bros. Ltd., cast-iron flanged pipes and fittings.

The S.A. de Rectification et d'Engrenages Procédés Minerva has received orders for nine 150-b.h.p. Minerva mechanical transmissions for railcars for Corsica ; and for similar equipments for three 270-b.h.p. diesel cars for the Ivory Coast Railways and for eleven 80 and 135-b.h.p. railcars for various French local lines. The equipment being sent to Corsica is a repeat order.

The South Indian Railway Administration has placed orders to the inspection of Messrs. Robert White & Partners, as follow :—

Mannesman Trading Co. Ltd., 396 solid drawn steel boiler tubes.
John Spencer & Sons, 230 helical locomotive, carriage and wagon springs.
Thomas F. Johnson Limited, 840 cast-iron lavatory push cocks.
Nye & Menzies, on behalf of S. A. Gilsoco, 34 tons dogspikes.
Anderston Foundry Co. Ltd., 80,000 wrought iron permanent way gibs.
The Superheater Co. Ltd., 100 sets of superheater element ball ends.
Banting & Tresilian, eight copper firebox back plates.

U.S.S.R. Orders Placed in Great Britain

According to preliminary figures supplied by the U.S.S.R. Trade Delegation, the total value of the orders placed in June of this year amounted to £585,560, as compared with £607,171 in June, 1935. In the first half of the current year, according to preliminary figures, the total value of orders placed is only slightly higher than that of the corresponding period in 1935, totalling £4,576,794, as compared with £4,524,631. The increase in the current year amounted to a little over £50,000. According to H.M. Customs statistics, in the first five months of this year imports from the U.S.S.R. amounted to £4,486,911, while exports and re-exports to the Soviet Union from the U.K. amounted to £5,983,704. There was thus a favourable trade balance for the U.K. amounting to £1,496,793. Of the total shipments to the U.S.S.R., £1,308,525 represented exports from this country, and £4,675,179 re-exports.

The Egyptian State Railways administration invites tenders, receivable by October 31, for two bogie tank wagons ; and, receivable by November 28, for quantities of steel box trucks up to 200.

The Bengal & North Western Railway invites tenders, receivable by September 22 at 237, Gresham House, Old Broad Street, London, E.C.2, for one YF and one YB type locomotive boiler.

The Chief Controller of Stores, Indian Stores Department, invites the following tenders receivable on the dates named :

Three single-operator d.c. arc welding sets required for locomotive, carriage, and wagon shops, N.W. Railway, Moghalpura (September 10).
Electro-magnetic grab required for East Indian Railway, Jamalpore (September 14).
Track tools required during period December 16, 1936, to December 15, 1937, for State Railways (September 21).
Rectifier plant complete with h.t. and l.t. switchgear and transformers for Allahabad, East Indian Railway (September 24).

The Bombay, Baroda & Central India Railway Administration invites tenders, receivable by September 11 at The White Mansion, 91, Petty France, Westminster, London, S.W.1, for the supply of plates and separators for train lighting accumulators.

The South African Railways & Harbours Administration is calling for tenders, for the supply and delivery of Scotch screw-eyed augers, &c., to be presented in Johannesburg by October 1.

The South African Railways & Harbours Administration is calling for tenders, to be presented in Johannesburg by September 28 for the supply and delivery of one 20-cwt. Rigby type steam hammer.

MAIN LINE GRADIENTS : SPECIAL SECOND EDITION

The demand for "Gradients of the British Main-Line Railways" has been such as to necessitate already the preparation of a second edition. It has been suggested to the publishers that for some purposes it would be convenient if copies could be obtained printed wholly on a stout white art paper. In reprinting, the opportunity occurs for making such copies available, provided orders are placed in advance. Readers who wish, therefore, to obtain copies printed on white paper only, should send their orders, together with a remittance of 5s. net a copy, to The Publisher, "Gradients of the British Main-Line Railways," 33, Tothill Street, London, S.W.1, on or before September 7.

Railway Share Market

Although most sections of the stock and share markets have shown features of interest there has been little increase of business reported since the commencement of the new Stock Exchange account on Monday. Had more active conditions prevailed it seems that home railway stocks would have shown considerably more response to the excellent traffic figures for the past week. The aggregate gain of £187,000 shown by the traffics of the four main lines for the past week was in excess of anticipations.

L.M.S. ordinary was in larger request on the traffic gain of £78,000, and both the 4 per cent. and 1923 preference were firm at 87 and 77 respectively. L.N.E. stocks were bought, also on satisfaction with the traffic increase which in this case was £64,000—the total increase to-date for the year is £934,000 and it is hoped that this week's figures will bring it up to around £1,000,000. The second preference was good at 30 as was the first preference at 75. More interest continued to be given to the preferred and deferred stocks of the railway, largely on the view that they may offer chances of moderate appreciation in price if the excellent trend in traffics persists for the rest of the year. A point to be noted was the development of more interest in Southern issues than has been shown in recent weeks. This was due to the £28,000 traffic improvement recorded for last week and to the belief that if weather conditions remain such as to stimulate passenger traffic, the figures may be equally satisfactory during the next few weeks. Southern deferred was in good demand up to 23 and the preferred was firm at 92. Great Western ordinary continued to come in for rather more attention in view of the apparently attractive yield offered on the basis of the 3 per cent. dividend and the belief that during 1937 more than 3 per cent. will probably be earned on the stock. London Transport "C" was fairly steady, although the disposition is to expect that the dividend payment will be kept on the conservative side.

Argentine railway stocks were dull but have been fairly well maintained. The tendency is to await the statements at the annual meetings to be held later in the year. B.A. Gt. Southern was rather out of favour and made the lower price of 16¼, but B.A. Pacific and Central Argentine were also fractionally lower on balance. There has been profit-taking in San Paulo following the recent upward movement. Nitrate Rails continued to display a firmer tendency. Canadian Pacific issues were rather out of favour on doubts whether the preference dividend will be resumed this year.

Traffic Table of Overseas and Foreign Railways Publishing Weekly Returns

	Railways	Miles open 1935-36	Week Ending	Traffics for Week: Total this year	Traffics for Week: Inc. or Dec. compared with 1935	No. of Weeks	Aggregate Traffics to Date: Totals: This Year	Aggregate Traffics to Date: Totals: Last Year	Aggregate Traffics to Date: Increase or Decrease	Shares or Stock	Prices: Highest 1935	Prices: Lowest 1935	Prices: Aug. 26, 1936	Yield (See Note)
				£	£		£	£	£					
South & Central America.	Antofagasta (Chili) & Bolivia	834	23.8.36	17,000	+ 5,270	34	456,560	417,620	+ 38,940	Ord. Stk.	23	14 15/16	18	Nil
	Argentine North Eastern	753	22.8.36	9,326	+ 312	8	69,820	64,407	+ 5,413	"	7	4	3 1/2	Nil
	Argentine Transandine	—	—	—	—	—	—	—	—	A. Deb.	49 1/2	30	47 1/2	8 7/16
	Bolivar	174	July, 1936	6,600	+ 1,300	30	47,600	44,700	+ 2,900	6 p.c. Deb.	13	5	10	Nil
	Brazil	—	—	—	—	—	—	—	—	Bonds.	14	11	15 1/2	3 1/4
	Buenos Ayres & Pacific	2,806	22.8.36	75,747	+ 3,991	8	£65,954	578,159	— 12,205	Ord. Stk.	10 1/2	4 7/8	8	Nil
	Buenos Ayres Central	190	8.8.36	$139,000	+ $5,800	8	$734,600	$754,500	— $19,900	Mt. Deb.	21	10	14	Nil
	Buenos Ayres Gt. Southern	5,084	22.8.36	£13,240	— 10,131	8	831,192	921,249	— 90,057	Ord. Stk.	27	13 1/2	17	Nil
	Buenos Ayres Western	1,930	22.8.36	41,476	+ 4,482	8	302,611	317,427	— 14,816	"	24	10	14	Nil
	Central Argentine	3,700	22.8.36	138,178	+ 23,880	8	996,293	955,222	+ 41,071	"	17 7/8	7	12	Nil
	Do.	—	—	—	—	—	—	—	—	Dfd.	9	3 1/4	7	Nil
	Cent. Uruguay of M. Video	273	15.8.36	10,618	+ 3,380	7	69,123	£9,145	+ 9,978	Ord. Stk.	8 1/2	3	4	Nil
	Do. Eastern Extn.	311	15.8.36	1,597	+ 296	7	11,920	9,544	+ 2,376	—	—	—	—	—
	Do. Northern Extn.	185	15.8.36	1,706	+ 675	7	10,302	8,353	+ 1,949	—	—	—	—	—
	Do. Western Extn.	211	15.8.36	1,048	+ 316	7	6,286	4,732	+ 1,554	—	—	—	—	—
	Cordoba Central	1,218	22.8.36	37,790	+ 4,140	8	288,280	269,920	+ 18,360	Ord. Inc.	4	1	1 1/2	Nil
	Costa Rica	188	June, 1936	26,958	+ 11,439	52	186,880	191,757	— 4,877	Stk.	35	30	33	6 1/16
	Dorada	70	July, 1936	16,000	+ 2 400	31	95,300	80,400	+ 14,900	1 Mt. Db.	103 5/8	102 1/2	104 1/2	5 3/4
	Entre Rios	810	22.8.36	12,279	— 704	8	92,289	96,835	— 4 546	Ord. Stk.	15	6 1/2	7	Nil
	Great Western of Brazil	1,082	22.8.36	5,300	+ 400	34	251,800	252 300	— 500	Ord. Sh.	1/2	5/16	1/2	Nil
	International of Cl. Amer.	794	June, 1936	$379,015	+ $7,469	26	$2,996,615	$2,632,186	+ $364,429	—	—	—	—	—
	Interoceanic of Mexico	—	—	—	—	—	—	—	—	1st Pref.	1/2	3/32	1/2	Nil
	La Guaira & Caracas	22¾	July, 1936	4,910	+ 1,185	30	32,250	27,570	+ 4,680	Stk.	8 1/2	8	8 1/2	Nil
	Leopoldina	1,918	22.8.36	27,203	+ 5,771	34	£15,545	568,047	+ 47,498	Ord. Stk.	8 1/2	2 1/2	4 1/2	Nil
	Mexican	483	21.8.36	$288,700	+ $69,400	8	$1,784,800	$1,856 100	— $71,300	"	1 1/2	1/4	1/2	Nil
	Midland of Uruguay	319	July, 1936	7,734	+ 2,232	5	7,734	5,502	+ 2,232	"	1 1/2	1 1/2	1/2	Nil
	Nitrate	397	15.8.36	3,117	— 1,688	33	84,113	93,610	— 9,497	Ord. Sh.	64/-	42/-	2 3/4	Nil
	Paraguay Central	274	15.8.36	$2,414,000	+ $66,900	7	$17,205,000	$14,237,000	+ $2,968,000	Pr. Li. Stk.	80 1/2	60	72 1/2	8 1/4
	Peruvian Corporation	1,059	July, 1936	84,321	+ 10,508	4	84,321	73,813	+ 10,508	Pref.	105 8	67 16	101 4	Nil
	Salvador	100	15.8.36	¢11,650	+ ¢855	7	¢71,623	¢88,436	— ¢16,813	Pr. Li.Db.	65	61	20	Nil
	San Paulo	153½	16.8.36	26,833	+ 4,273	33	983,597	786,337	+ 197,260	Ord. Stk.	80	35	56 1/2	4 7/16
	Taltal	164	July, 1936	2,525	—	5	2,525	2,525	—	Ord. Sh.	1 11/16	1 1/8	1 5/16	12 5/16
	United of Havana	1,353	22.8.36	16,096	— 950	8	121,913	147,976	— 26,063	Ord. Stk.	3 1/16	1	2 1/2	Nil
	Uruguay Northern	73	July, 1936	866	+ 232	5	866	634	+ 232	Deb. Stk.	4 1/2	2 15/16	4 1/2	Nil
Canada.	Canadian National	23,615	21.8.36	711,082	+ 83,105	33	22,167,197	20,855,866	+ 1,311,330	—	—	—	—	—
	Canadian Northern	—	—	—	—	—	—	—	— 4 p.c.	Perp. Dbs.	78 5/8	52 1/2	66 1/2	6
	Grand Trunk	—	—	—	—	—	—	—	—	4 p.c. Gar.	103 5/8	93	101 1/2	3 15/16
	Canadian Pacific	17,237	21.8.36	520,400	+ 42,800	33	16,204,900	14,945,200	+ 1,258,800	Ord. Stk.	14 1/16	8 5/8	11 1/2	Nil
India.†	Assam Bengal	1,329	31.7.36	34,335	+ 599	18	410,515	395,643	+ 14,872	Ord. Stk.	92 1/8	77 1/2	85 1/2	3 1/2
	Barsi Light	202	31.7.36	2,505	— 4,530	18	44,850	54 097	— 9,247	Ord. Sh.	105	77 1/2	72 1/2	6 7/8
	Bengal & North Western	2,112	10.8.36	59,827	+ 2,200	19	1,005,391	952,811	+ 52,580	Ord. Stk.	301 1/2	291	310	5 5/16
	Bengal Dooars & Extension	161	20.7.36	3,124	— 250	16	36,025	36,617	— 592	"	127 1/2	122	125 1/2	5 9/16
	Bengal-Nagpur	3,268	31.7.36	152,775	— 14,320	18	2,071,231	2,190,999	— 119,768	"	105	100 5/16	102 1/2	3 7/8
	Bombay, Baroda & Cl. India	3,072	20.8.36	181,125	+ 14,700	20	3,279,300	3,063,750	+ 215,550	"	115 1/4	110	111 1/2	5 7/8
	Madras & Southern Mahratta	3,229	31.7.36	151,273	+ 9,126	18	1,961,578	1,903,985	+ 57,593	"	128 1/2	113 7/8	112 1/2	8
	Rohilkund & Kumaon	546	10.8.36	9,849	+ 1,068	19	203,267	183,811	+ 19,456	"	294	262	308 1/2	5 5/16
	South India	2,532	20.7.36	105,435	— 6,084	16	1,249,030	1,279,657	— 30,627	"	119 3/4	104 1/4	103 1/2	5 5/16
Various.	Beira-Umtali	204	June, 1936	64,192	+ 8,141	39	577,342	576,265	+ 1,077	—	—	—	—	—
	Bilbao River & Cantabrian	15	June, 1936	1,397	+ 136	26	8,525	9,905	— 1,380	—	—	—	—	—
	Egyptian Delta	620	10.8.36	6,102	+ 12	19	76,239	70,235	+ 6,004	Prf. Sh.	2	15 8	1 1/4	5 11/16
	Great Southern of Spain	104	8.8.36	279	— 969	32	32,166	55,775	— 23,609	Inc. Deb.	3 1/2	2	3 1/2	Nil
	Kenya & Uganda	1,625	July, 1936	184,229	+ 4,789	30	1,614,901	1,472,623	+ 142,278	—	—	—	—	—
	Manila	—	—	—	—	—	—	—	—	B. Deb.	48	36	43	8 1/8
	Mashonaland	913	June, 1936	100,926	— 1,113	39	916,081	1,047,960	— 131,879	1 Mg. Db.	104 1/4	100	103 1/2	4 13/16
	Midland of W. Australia	277	June, 1936	11,961	+ 222	52	161,372	159,574	+ 1,798	Inc. Deb.	98 3/4	93	95 1/2	4 5/16
	Nigerian	1,905	4.7.36	24,522	+ 3,764	14	401,243	351,725	+ 49,518	—	—	—	—	—
	Rhodesia	1,538	June, 1936	188,938	+ 6 401	39	1,668,785	1,724,710	— 55,925	4 p.c. Db.	105 1/2	101	105 1/2	3 15/16
	South African	13,263	1.8.36	£35,393	+ 75,097	18	10,416,424	9,594,904	+ 821,520	—	—	—	—	—
	Victoria	4,728	May, 1936	779,712	+ 8,120	48	8,986 232	8,734,254	+ 251,978	—	—	—	—	—
	Zafra & Huelva	112	May, 1936	8,821	— 2,027	22	48,574	55,398	— 6,823	—	—	—	—	—

NOTE.—Yields are based on the approximate current prices and are within a fraction of 1/16.

† Receipts are calculated @ 1s. 6d. to the rupee. § ex dividend. Salvador and Paraguay Central receipts are in currency.

The variation in Sterling value of the Argentine paper peso has lately been so great that the method of converting the Sterling weekly receipts at the par rate of exchange has proved misleading, the amount being overestimated. The statements from July 1 onwards are based on the current rates of exchange and not on the par value.